NEWSPAPER

and a message-handling system during the International Communications Association's conference here last week.

The Roadrunner Digital Edition developed by the Action/Honeywell Division is a multinode network switching system for integrating private voice and data networks. Designed for Fortune 500 companies, large financial institutions and state government organizations

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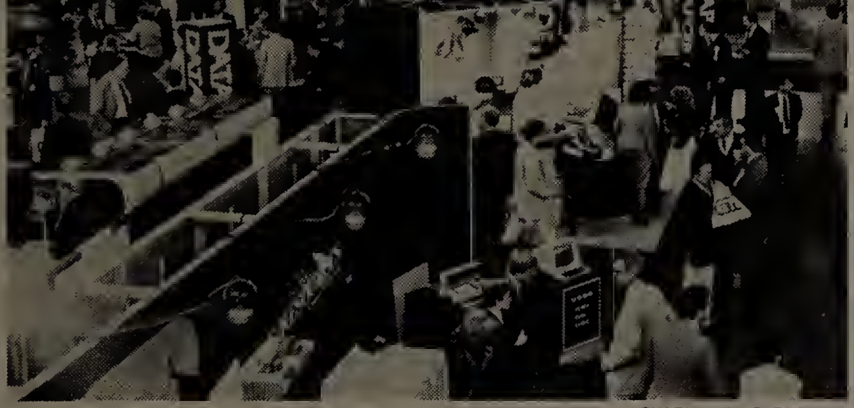

CW Photo by S. Blakeney

People got on line to view communications products at the ICA show in New Orleans last week. Coverage continues on Page 9.

Despite a recent decision by a New York criminal court judge who ruled that using an employer's computer for one's personal use is not a crime, DPers still view it as computer abuse.

That was the feeling of DP executives contacted last week in a *Computerworld* telephone survey designed to gauge their reaction to the dismissal last month of theft of services charges against Theodore Weg, a New York City Board of Education DPer accused of using his employer's computer to trace the genealogies of racehorses [CW, May 3].

DP professionals from across the country overwhelmingly agreed that whether or not the use of a company's computer system for nonbusiness purposes

Al DeSantos, a DP manager at American Capitol Corp. in Miami, Fla., said that if nothing else, someone using a computer for a task other than his authorized work is stealing time.

Referring to the Weg case, he said, "He may have had legitimate access to the machine, but not for the use he put it to." DeSantos pointed out that a DPer could be developing software for another company on his present employer's machine. He added, "If someone has the time to do things like trace racehorse genealogies, he's neglecting his job."

James R. Yoakum, vice-president of information systems for Marriott Corp. in Washington, D.C., stressed that the computer is a corpo-

(Continued on Page 4)

CW at ASM

Traits of Top DP Managers Described

By Brad Schultz
CW New York Bureau

KANSAS CITY, Mo. — The traits common to managers of successful DP departments in moderately large companies were described here last week at the annual Association for Systems Management conference.

In a session entitled "Critical Success Factors for the Information Systems Function," Index Systems, Inc. Vice-President Gary K. Gulden cited research conducted by the MIT Sloan School of Management's Center for Information Systems Research (Cisr) into what accounts for success in commercial DP departments.

Dr. John Rockart, Cisr's executive director, led that research and originated the notion of critical success factors, Gulden noted. Gulden and others at Index Systems, a Cambridge, Mass.-based consulting company, worked with Rockart's team on this and other projects during the last few years.

After examining nine corporations that gross tens to

(Continued on Page 6)

CW at NMA

Contests, Giveaways Highlight Show

By Tim Scannell
CW Staff

ST. LOUIS — A picture may be worth a thousand words, but many of the vendors at the National Micrographics Association's annual conference and exposition here last week did not rely solely on products to attract the crowds.

As in any DP show, there were more than enough contests, prizes and giveaways to lure even the most stubborn attendee.

To focus attention on its line of microfilm equipment, terminals and Komstar microimage processors, Eastman Kodak Co. held a number of drawings for free Kodak instant cameras.

Nearby, 3M Co. attracted attention by building a wooden wharf and "docking" a 10-foot sailboat in the center of its equipment display. The *Yankee Girl* is the smallest boat to cross the Atlantic and Pacific oceans. 3M held a drawing to give away 100 copies of a book written by the boat's pilot, Gerry Speiss, about his 1979 Atlantic voyage. Speiss, whose father happened to work for 3M International, was also on hand to sign autographs.

Xidex Corp., a Sunnyvale, Calif., firm that was showing a new type of microfilm, asked attendees not to "nickel and dime" themselves by staging a contest to guess how many coins were inside a small plastic container. The prize was a $500 ingot of pure silver.

A.B. Dick Co., which demonstrated its System 200 mi-

(Continued on Page 9)

CW Photo by T. Scannell

The *Yankee Girl* docked at the 3M Co. booth when the NMA show pulled into St. Louis last week. More coverage on Page 11.

Dramatic Opening Marks Hearings on Soviet Spying

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — A Senate investigations panel opened five days of hearings on Soviet high-technology espionage last week with dramatic testimony from a Russian emigre engineer concealed behind a portable screen and from a convicted spy flanked by armed federal agents.

The Russian, using the alias of Joseph Arkov, discussed his work in a Soviet research institute copying stolen American technology. The spy, William Holden Bell, told of being seduced into serving communist agents posing as American-based businessmen and of delivering advanced radar designs to the Eastern Bloc.

The cloak-and-dagger flavor of their appearance provided an appropriate flair to the week-long hearings held by the Senate's Permanent Subcommittee on Investigations. The panel has spent 14 months looking into diversion of U.S. high technology, particularly computers and microelectronics, to the USSR through legal and illegal means.

The subcommittee staff investigation has been directed by Sen. Sam Nunn (D-Ga.), who opened the hearings last Tuesday by stating, "The Soviets have come to view our technology as their tech-

(Continued on Page 6)

Execs Get Access To Graphics Data Sans Keyboard

By Lois Paul
CW Staff

ANN ARBOR, Mich. — Comshare, Inc. has launched a graphics system designed to enable executives to access data in the form of color graphics on a keyboardless terminal in their offices.

The software for the Commander Executive Management Reporting system reportedly runs on IBM or plug-compatible mainframes under VM operating software. It is not supported by Comshare's time-sharing network.

According to the vendor,

(Continued on Page 2)

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New VAX-11/750 Hikes Memory

MAYNARD, Mass. — An entry-level configuration of Digital Equipment Corp.'s mid-range VAX-11/750 superminicomputer that boasts twice the memory and more than twice the disk storage of the original Model 750 at a 10% lower price was unveiled here last week.

In addition, the vendor announced price reductions of up to 69% for most VAX-11 computer system add-on memory packages.

The new VAX-11/750 configuration is said to include the RA80 Winchester-type disk drive and the RL02 removable-cartridge disk unit, which provides a total of 131M bytes of formatted storage space. Both disk units attach to the system's Unibus by way of the UDA50, a microprocessor-controlled disk adapter, the vendor explained.

The price of the new configuration, with 1M byte of memory, a DEC LA120 printer terminal and the VMS operating system with full support is $84,900. Deliveries are scheduled to begin in June 1982.

The announced memory price reductions reportedly apply to modules using the 16K-bit random-access memory chips. VAX-11 systems that use 16K-bit memory modules are the VAX-11/780 and the VAX-11/750. Each module contains 256K bytes of error correction code MOS (ECC MOS) memory.

The new 16K-bit memory prices for the VAX-11/780 and the VAX-11/750 systems are $2,400 for 256K bytes; $4,000 for 512K bytes; and $7,000 for 1M byte. Additional prices for VAX-11/780 systems are $13,000 for 2M bytes; $18,000 for 3M bytes; and $22,000 for 4M bytes.

The $2,400 price for 256K bytes of 16K-bit memory is said to represent a 69% reduction from the old price. The 4M-byte package for the VAX-11/780 has a per-megabyte price of $5,500, which is down 60%. The reductions are effective immediately.

DEC is headquartered at 129 Parker St., Maynard, Mass. 01754.

Execs Get Graphics System

(Continued from Page 1)

EMR can interface with any data base management system resident on an IBM-compatible mainframe. Required for use of EMR are two disk drives and one IBM 8809 tape drive. Software requirements are IBM's VM Installation Productivity Option, IBM's Graphical Data Display Manager/Presentation Graphics Facility and a Pascal compiler.

EMR was designed to extract data from internal or external data bases and transform this into graphics via Comshare's Execuchart stand-alone graphics system.

The terminals used in the executive suite can be either Comshare's Executive Display Station (EDS) or an IBM 3279.

Peter M. Berg, vice-president of graphics market and sales for Comshare, explained that EMR includes a reminder facility whereby a particular data base can be accessed with a certain frequency so updated data can be provided in the form of graphics for executive review.

Also linked into the EMR system is System W, a decision support package Comshare has developed.

What the executive sees on the terminal is a menu of graphs and charts that have been prepared by EMR. Using the IBM 3279, the executive employs a light pen to select the charts he wants to see. With the Comshare EDS terminal, he uses a remote control key pad to make his selections.

Executives preparing for board presentations can link some of the charts on their menu and send them to EMR for transmission to a large-screen projection device in the board room at a specified time, Berg continued.

The executive can request hard copy of particular charts in the form of either paper, slides or transparencies, he said.

The various types of output generated by the EMR can be obtained through use of equipment such as a Dunn Instruments, Inc. or Matrix Instruments, Inc. camera, a Xerox Corp. laser printer or a Trilog, Inc. color printer, Berg said.

The entire EMR package, including all capabilities, is priced at $110,000. Module I of EMR, which includes the data acquisition, conversion and reminder features for use on the Comshare EDS terminal only, is available for $42,000. Module II of the package, which includes only the conversion and reminder modules for use with internal data bases only, is priced at $20,000.

The Execuchart console, the stand-alone graphics system that is required for the EMR system, can be purchased for $45,000 or rented for $1,500/mo. The optional Comshare EDS is priced at $25,000.

Comshare is headquartered at 3001 S. State St., Ann Arbor, Mich. 48104.

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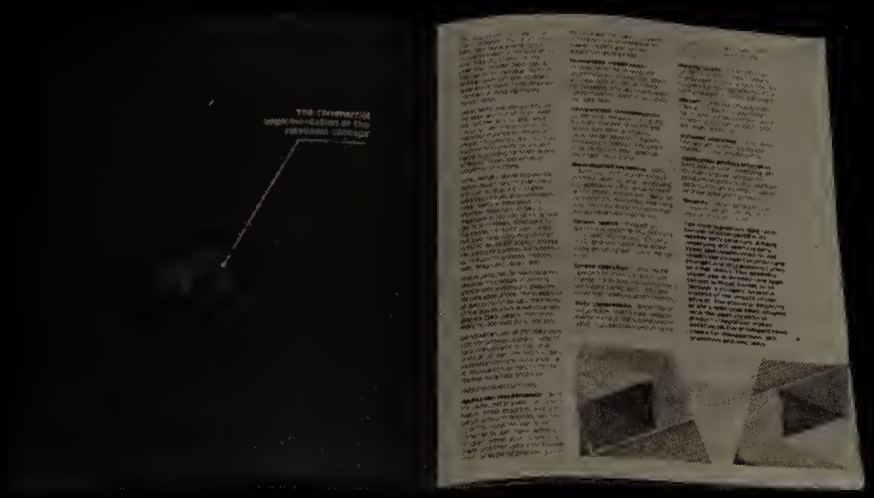

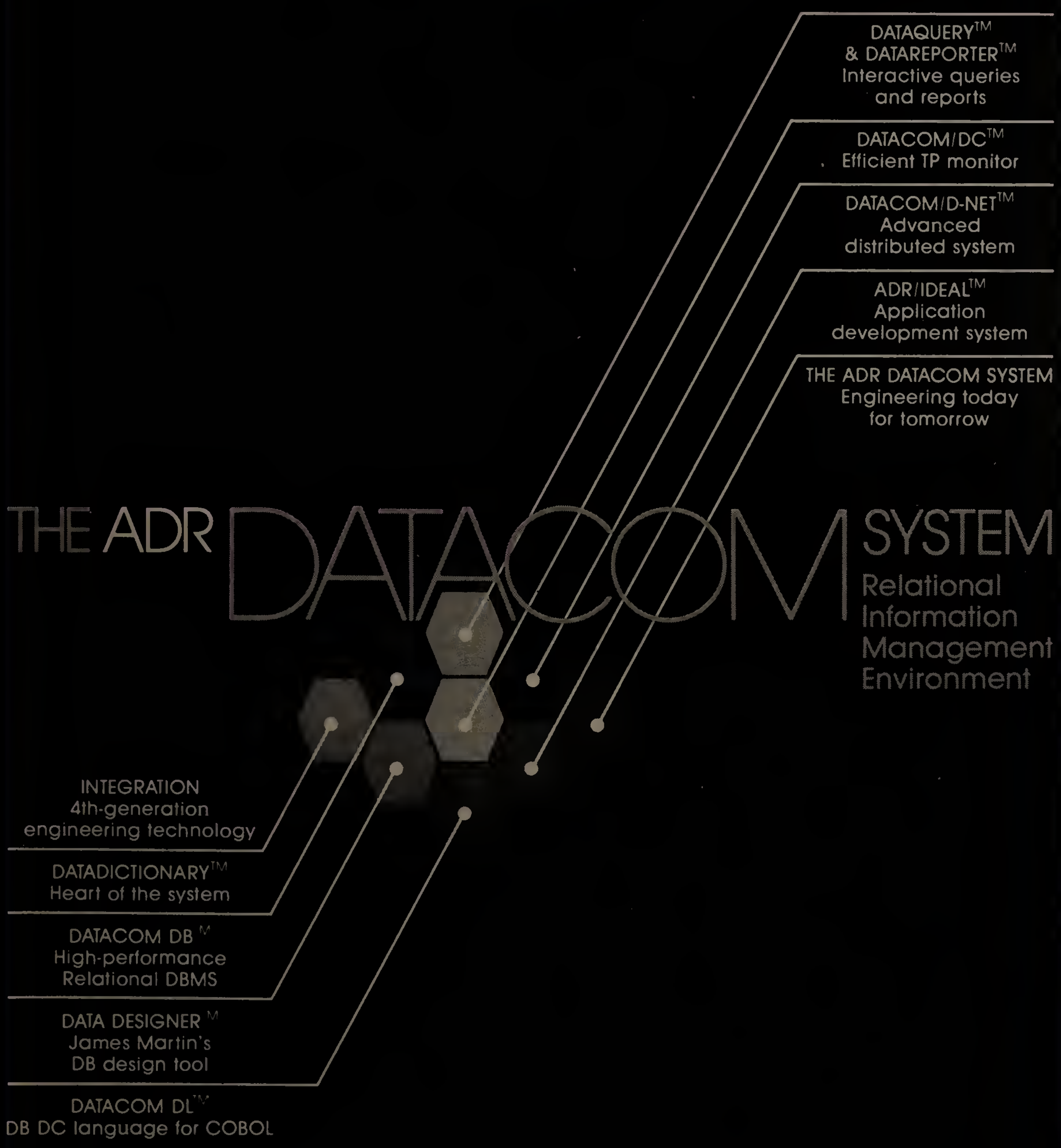

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Legal Community at Odds Over Weg Decision

By Bob Johnson
CW New York Bureau

NEW YORK — Has a Brooklyn judge opened a DP Pandora's box by ruling that a DPer who used his employer's computer for personal use did not commit a crime?

The legal community close to the computer industry has mixed opinions at best.

Judge Michael R. Juviler, who dismissed theft of services charges against Theodore Weg, a New York City Board of Education DPer [CW, May 3], explained that his decision to do so was based strictly on interpreting the language of the law as it is written in New York state statutes dealing with the use of computers.

Juviler told *Computerworld* that the statute, written in 1967, prohibits the unauthorized use of a computer by individuals for commercial or industrial gain. He maintained that in the Weg case the defendant did have legitimate access to the computer and it was not proven that he was guilty of theft of services as the law prescribes.

The judge noted that this statute has never before been applied or determined by a New York court. He said that he did extensive research into the known computer laws, noting that in some states there are specific laws that even prohibit internal personal use of a computer. The New York provision, however, does not.

The lack of a New York law for computer abuse was the key to the decision in the Weg case, according to Susan Nycum, an attorney with Gatson Snow & Ely Bartlett on the West Coast. Nycum, who specializes in computer litigation, said that because New York state does not have this type of law the question of computer crime rests with whether or not a DPer has authorized access to the system. Commenting on the Weg situation, Nycum said that he did in fact have permission to use the computer and that was the reason for the dismissal.

Nycum explained that in a computer litigation suit which is not clear-cut, criminal laws are often construed "too narrowly." She said that the theft of services charges against Weg were probably the only charges the prosecutors could bring against the defendant because of the lack of criminal laws in the computer area.

The attorney stressed that this particular case is a perfect example for the DP community to take note of. She said that companies have to realize that they are responsible for making their employees aware of what *is* and *is not* permissible in the DP environment.

"Computer people have to be told where to draw the line. It has to be spelled out or you're going to run into problem cases such as this one," she said. "What isn't listed as unauthorized actions will leave a legal loophole," she added.

When asked if this case could set precedents, Nycum said that it is below the appellate level, so precedents are not typically set. However, she pointed out that other judges faced with similar cases may refer to it as "good reasoning" in determining their rulings.

Trouble Spots

Nycum expressed a concern for all DP people involved in these types of circumstances. She pointed out that DPers may find themselves in situations which they feel are harmless but could nevertheless get them in trouble. By the same token, the attorney said, companies that prosecute employees who use computers for personal use and think it is the right thing to do may be leaving themselves open for counter suits.

Thomas K. Christo of Christo & Watson, a legal firm in North Hampton, N.H., is also an expert in computer litigation and had some different views on the Weg case. Christo described it as "Much ado about nothing." He explained that there is really no need for computer laws and stated that tried-and-true larceny laws can be applied to computer cases just as they are to any other case involving theft.

"Too many people think that computer cases need special statutes. There are common laws for larceny. It's the same thing as someone using a car and not being authorized to do so," he said.

Christo further commented, "Statutes with computer problems tend to be written by legislators who know nothing about DP. That is the worst possible way to have these cases decided."

The attorney noted that the decision in the Weg case should not be read too broadly by the legal and the DP worlds. "It is a mistake to think that this case should stand for this kind of action carte blanche," he said.

DPers View Personal DP Use as Abuse

(Continued from Page 1)

rate resource and any misuse of that resource usurps the efficiency of a company. Yoakum said his firm probably would not treat a misuse as a criminal offense. He pointed out, however, that the severity of the abuse has got to be determined. "It has to be a judgment call," he said. "We're in the food business, so an analogous example would be if someone was found to be stealing hamburgers. We would probably fire him, but not necessarily prosecute him."

John F. Matousek, vice-president of DP for Johns-Manville Corp. in Denver, agreed that an abuse such as Weg's should not necessarily be treated as a crime. Instead, the employee should probably be terminated. "It is generally known that you don't use a computer for personal use. However, I don't personally think it is a crime, unless state statutes dictate that it is," Matousek said. "If the people involved were using the computer to illegally embezzle [funds from] the company," he explained, "now that's a different story."

Tampering with a computer for personal use is indeed a crime, according to Larry Conrad, a manager of systems support for Greyhound Corp. in Phoenix. "I view DP resources as financial resources. If you have a teller caught with his hand in the till, it's a crime. It is very similar with computers," Conrad explained.

Conrad said he disagreed with the judge's dismissal ruling, adding that the legal system still views DP as a "big toy" and does not take it seriously enough.

'Gee Whiz' Software

Many companies actually set themselves up for this type of abuse, Conrad noted. When companies began to install on-line systems, games and other "gee whiz" software were demonstrated as part of the sale. This has continued through the years and now audit packages are revealing that substantial amounts of time are being lost because of game playing on machines.

One state government DP manager in Connecticut who wished to remain anonymous is very concerned with the decision. "This type of thing can open up a can of worms in DP. It might be a green light signal to those types inclined to commit some fraud. They may say to themselves, 'Even if I get caught and go to court, I have this decision to refer to. I can take more risks now,'" the DPer cautioned.

A key point in Weg's defense was that the Board of Education did not publish any document prohibiting the personal use of its computer. All of the survey respondents agreed that it is a company's responsibility to make employees aware of what can and cannot be done on a system.

James B. Clary, vice-president of DP at the El Paso National Bank in El Paso, Texas, said that his shop has this type of operating procedure to guard against abuse. "Although the standards are for the entire company, and not just the computer area, nothing can be used for personal use. Not even discarded punch cards," he said.

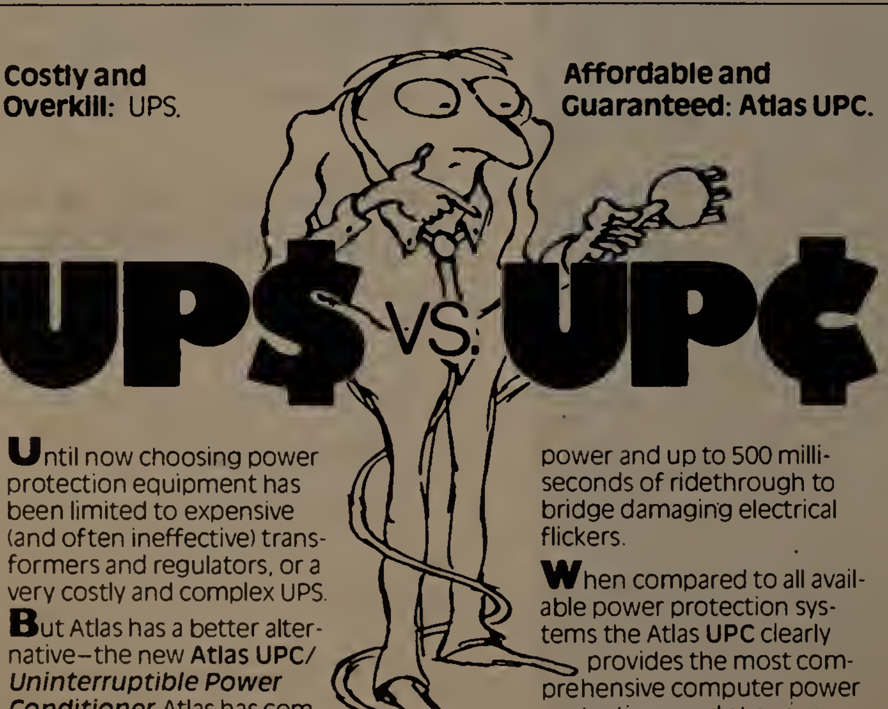
Lawrence Bakst, manager of EDP Audit for SCM Corp. in New York City, pointed out that the more important issue in the Weg situation was the security breach. He said that if Weg could have done what he did without being detected, what was to stop him from committing more serious abuses? "It is the company's responsibility to make sure that programmers are doing only authorized work — whether that be [done] through audit controls, policy or simple policing," he said.

Graphics Meet Set To Run June 13-17

ANAHEIM, Calif. — The National Computer Graphics Association, Inc. (NCGA) will host NCGA '82 here June 13-17 to examine the graphics industry.

Tutorial sessions on animation, architectural and engineering uses of computer-aided design systems, graphics on shared computers and device-independent graphics will be featured.

Technical sessions include "Hardware and Software Standards and Directions for the '80s," "Mapping and Cartography," "Mechanical Computer-Aided Design/Computer-Aided Manufacturing" and "Petroleum Applications." Cost to attend the conference is based on half-day attendance. Cost to attend a half day of tutorial sessions is $125. Two half days are $225, three half days are $295. Cost to attend one half day of technical sessions is $150, two half days are $270, three half days are $345. A copy of the proceedings costs $30. Registration fees should be sent to NCGA '82 Registration, NCGA, Suite 330, 2033 M St. N.W., Washington, D.C. 20036.



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Tries to Reassure Senate Panel

Administration: Secrecy Order Nothing New

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The Reagan administration defended its controversial new government information secrecy regulations last week, assuring a House of Representatives subcommittee that the new classification scheme should not be viewed as a radical departure from previous regulations.

The newly issued Executive Order on National Security Information will not lead to an increase in the number or types of government documents classified or the number of federal employees with classification authority.

Such was the message from Steven Garfinkel, director of the General Service Administration's Information Security Oversight Office, as he spoke with members of the House Government Information and Individual Rights Subcommittee last Wednesday.

"What we really have here is quite a reasonable [classification] system . . . We really don't have the radical document here that some would assume," Garfinkel said.

In no way would the administration tolerate "indiscriminate" classification of any information, he told the subcommittee.

Not Everybody Reassured

Subcommittee Chairman Rep. Glen English (D-Okla.), however, did not appear especially reassured by Garfinkel's statement.

English argued that although the previous classification order, issued under former-president Jimmy Carter, is considered by some as vague, the new order is even vaguer.

Reading the new order as urging a "when in doubt, classify" approach to federal documents, the Oklahoma Democrat said that the Reagan guidelines will lead to greater secrecy in the government.

English also expressed concern that the new order does not expressly forbid classification of private-sector information, particularly concerning technology, as did the Carter order.

Garfinkel responded that the order does not explicitly rule out classification of private-sector data because such a provision is unnecessary, and that the government does not have the authority to classify such information.

Subcommittee members spent considerable time on a number of such points. Throughout the session they attempted to obtain for the public record the administration's interpretation of what some in Congress feel is an order open to a great deal of interpretation or misinterpretation by classification officers in the field.

Subcommittee Upset

The subcommittee also took the administration to task for not having sent representatives to earlier hearings on the subject.

In March, the National Security Council and the Justice Department had declined to testify, arguing that to do so would be inappropriate until the draft executive order had been delivered to the President for a final decision [CW, March 22].

English did not accept that reasoning when restated last week by Deputy Assistant Attorney General Richard Willard. The Justice Department official answered by saying that testifying while the order was still being prepared would have been "virtually unprecedented" for White House advisers.

Subcommittee member Rep. Ted Weiss (D-N.Y.), however, called the earlier refusal to testify "another example of the administration, wittingly or unwittingly, slamming the door of access on the American people."

English also objected to the administration deciding, when it did send someone to Capitol Hill to discuss the order, not to send any officials who had a hand in developing the new classification policy.

But, English said, "I know I wouldn't want to defend this order in public if I could send someone else."

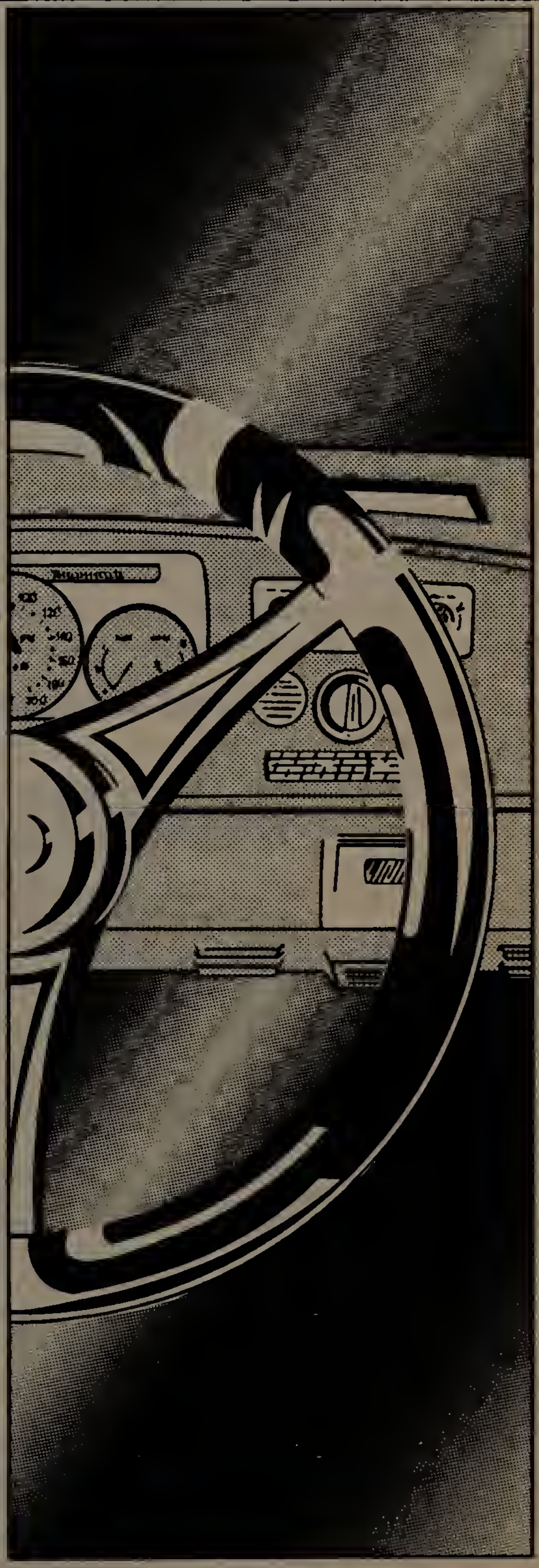
Order Will Stand

While the Democrats on the subcommittee were clearly not satisfied with the administration's explanation of its classification order, there does not appear to be a lot that Congress can do about the new regulations.

A bill to redress what its sponsor sees as the more troublesome provisions of the new order has been introduced in the Senate.

The House panel could recommend similar legislation in the House, but that would raise serious questions of executive privilege and the separation of governmental powers.

When asked how the administration would react to such legislation, Willard responded that classification and national security regarding government information are undoubtedly "a fundamental constitutional responsibility of the President and the executive branch."



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Emigre Engineer, Spy Testify at Senate Hearings

Electronics Underworld

(Continued from Page 1)

nology, to be obtained whenever they need it."

The first witnesses discussed the methods used by the Soviets to obtain technology: traditional espionage; information gleaned from American publications, particularly government documents and U.S. technical journals; information, scientific and student exchanges; acquisitions from Eastern bloc marketing and manufacturing companies in the U.S.; and purchases diverted from business intermediaries, often posing as legitimate corporations.

The greatest emphasis of these activities, according to Arkov, who said he is now employed as an engineer by an optical firm in the Los Angeles area, is on obtaining technology to help the Soviets offset their lack of manufacturing skills.

Just copying advanced Western products is not sufficient, he explained, because the USSR does not have the capability to reliably fabricate the advanced components.

The Soviets have "some intellectual potential — they have smart people" — but not "the organization to utilize the intellectual potential," Arkov, who hid behind a small glass screen at the hearing, said. He explained he did not want his identity known because he feared Soviet retribution against relatives still living in the USSR.

Arkov's description of Soviet technology was supported by Dr. Lara H. Baker Jr. of the Los Alamos National Laboratory's International Technology Office who said "production is the Achilles' heel of the [Soviet] bloc," especially quality assurance.

This knowledge should help narrow the types of technology central to U.S. export control efforts, Baker said, noting the Defense Department's current project to pare its militarily critical technologies list.

"If the Soviets are going after something we don't care about," he said, "simply charge them a lot of money and let them have it." In its efforts to control many different types of technology, the U.S. is doing a poor job of controlling any technology, he said.

Baker served as technical consultant to the federal government's prosecution of Werner Bruchhausen, who through a number of front companies, particularly Continental Technology Corp. (CTC), managed to divert millions of dollars of state-of-the-art technology to the USSR [CW, Aug. 31].

Through a study of the invoices of CTC transactions with U.S. firms, Baker said he was able to determine the Soviets acquired a complete semiconductor manufacturing facility, mostly through purchases from Intel Corp., Fairchild Camera and Instrument Corp. and Rockwell International Corp.

Not only did the Soviets obtain a complete facility, they generally acquired four of each essential component to allow for the need for spare parts, according to Baker. But, he added, many of those components will have failed by now and the Soviets should soon be back in this country looking to replace them.

Baker suggested the government contact likely suppliers and warn them of Russian advances, which will presumably come from seemingly harmless business intermediaries.

Baker was generally critical of U.S. export control methods, although he praised the recently increased efforts of the Central Intelligence Agency and the Defense Intelligence Agency in this area.

Similarly, prisoner Bell, now serving a sentence at a federal facility in Missouri, claimed federal officials have done little to remove the Eastern spies that they know are operating in the U.S. high-technology scene.

After 30 years employment at Hughes Aircraft Corp., Bell was approached by a Polish spy, Marion Zacharski. Bell told the Senate panel he later learned from the Federal Bureau of Investigation that the U.S. knew Zacharski was a spy and knew he had contacted — in a seemingly innocent fashion — Bell, an engineer with access to secret military technology.

Bell further stated he initially considered the first contacts by Zacharski to be perfectly ordinary job offers from a legitimate American firm, Polamco, a Polish-owned Chicago firm and Zacharski's employer. He also said U.S. agents, although trailing Bell, made no effort to stop him from turning over secret data on radars to Polish agents.

Zacharski was moving freely and widely through West Coast high-technology circles, most members of which would not have known he was a spy, according to Bell.

He also said industry should be more vigilant. Hughes Aircraft knew he was going through a difficult divorce and needed money — "classic symptoms" of a good target for subversion, according to Bell.

Successful Traits Cited

(Continued from Page 1)

hundreds of millions of dollars annually and whose end users seem especially satisfied with DP services, the Cisr researchers found the following attributes common to the corporations' respective DP chiefs, Gulden said.

- These DP chiefs report directly to the president or chief executive officer of their companies. They therefore participate in top-level decision making, learn first-hand the problems confronting top management and can easily discuss their problems with the company's most influential people.
- The chiefs of successful DP departments seem to view themselves as managers, not simply technical experts. Accordingly, these DP executives concentrate on getting the most out of their people, rather than systems.
- The stewards of successful DP shops tend to view DP as contributing substantially to the company. They view DP as a business within the business of the overall company and hence emphasize service to "customers" — end users — rather than technical efficiency.
- Successful DP managers maintain a "high profile." They regularly promote the real and potential value of DP through interaction with a broad range of end users and managers.
- Successful DP managers view the organization served by their department from a political perspective. This means they are sensitive to the clout wielded by end users and other managers. They understand the objectives, constraints and problems of other managers and how these relate to the direct and indirect consequences of systems implementations.
- And, the people who run DP especially well are quite familiar with the critical success factors in their company.

What are critical success factors? As defined by Rockart, these are the factors that must be manifest for a company to achieve its overall objectives. Critical success factors are basically activities or processes, Gulden pointed out. They are usually not viewed as the concrete resources exploited in production or distribution, such as the raw materials necessary for manufacturing.

At the companies under study, Cisr determined the critical success factors in DP to include: human resources, repositioning of DP facilities, communication and service to end users.

In the area of human resources, the DP manager who wants to satisfy end users and the company's top management should create opportunities for DP professionals to develop in their careers; allow "cross-fertilization" of expertise among different categories of DP specialists, as well as among DPers and end users; and should develop skills as managers of people and as consultants, Gulden advised.

The critical success factor known as repositioning relates to trends such as the separation of systems management from data management and end-user accumulation of computational resources, he told the session. In this vein, what DP managers must do to achieve success is learn how to give power away gracefully. — relinquishing control of data bases and allowing end users to employ office-oriented personal computers in solving their problems.

To work on the communication critical success factor, DP departments need a strategic planning process that draws on feedback from end users and can benefit from the steering committee approach to systems development, Gulden indicated.

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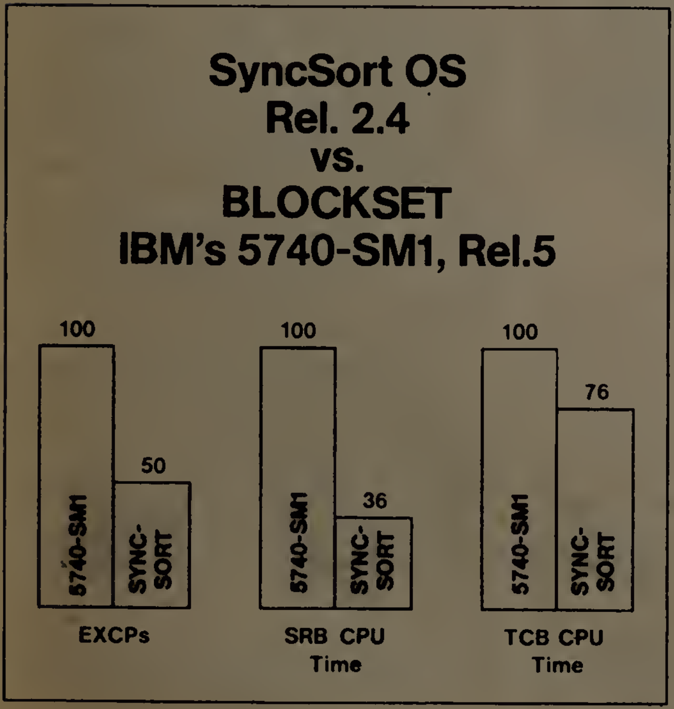

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J. P. Morgan & Co.	**First Chicago Corp.**

2. Here are the 10 largest life-insurance companies.* How many use SyncSort?_____

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3. Here are the 10 largest utility companies.* How many use SyncSort?_____

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- 7 to 14 companies use SyncSort—give yourself a C. Go back to the library and review sorting problems and how SyncSort solves them.
- 0 to 6 companies use SyncSort—give yourself a D. Your sorting is in trouble. Call us immediately for remedial coaching!

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*According to Fortune Magazine 1981.

Two Basic Disputes

ACM Embroiled in Election Controversy

By Jeffry Beeler
CW West Coast Bureau

Analysis

The Association for Computing Machinery (ACM) again finds itself embroiled in an election controversy, with this year's trouble revolving around two basic disputes.

One disagreement was triggered by an overly long ballot statement, which reportedly gave one of ACM's candidates for national office 40% more campaign exposure than any of his rivals.

The other bone of contention concerns the association's editorial policies, which require all ACM-funded publications to be reviewed and approved at headquarters before they can be distributed to their readers. The main objection to the advance-review policy is that it has helped delay the publication of several newsletters, including one that urged local chapters' members to OK a referendum that would give them representation on the national council.

Ballot Statement 'Fuss'

First, consider the fuss involving the ballot statement, which summarized the campaign views of ACM vice-presidential candidate Paul Abrahams. Although all contenders for vice-president were supposed to limit ballot statements to 200 words or less, Abrahams was allowed to exceed that total by 80 words.

Some ACM members, including former San Francisco Peninsula Chapter Chairman Jan Matser, see the extra word count as further evidence that ACM's "establishment" favors Abrahams over his campaign rivals.

"At last year's National Computer Conference in Chicago, someone overheard Abrahams being told that he was the leadership's choice for vice-president, but that if he wanted to win he would have to run by petition," Matser said.

But Abrahams tells the story differently. "I don't remember anyone telling me explicitly that I was an election favorite, and I find it hard to believe that anyone would," he said.

The length of Abraham's ballot statement was reportedly computed with the help of his own special algorithm, which treated all words containing less than five characters as fractions.

When he totaled all the fractions and added the sum to the number of whole words, his ballot statement came to 216 words.

"Apparently, the headquarters staff in New York decided that a surplus of 16 words wasn't worth worrying about, and they just let the statement stand," Abrahams said.

Now, consider the other subject of ACM's latest election flap. Early last February, during a meeting of the association's executives in Indianapolis, St. Louis-based chapters representative Gerald Oursler volunteered to publish a special edition of his thrice-yearly *Chapters Network Newsletter.*

The purpose of the special edition was to urge ACM voting members to join local chapters and vote affirmatively for the chapters-oriented ballot referendum. Originally, the newsletters had been scheduled to be ready for mass mailing in late March or early April.

But because of a longer-than-expected approval cycle at headquarters and a batch of misprinted mailing labels, only about 20% of the literature found its way to the post office before April 21, Oursler said. The unforeseen delay meant that the brochures would be unlikely to arrive at their destinations until most of ACM's voting members had already cast their ballots.

The failure of the newsletters to reach their recipients on time "has preempted our efforts to publicize the chapters' board referendum and has probably reduced its chances of passage to 50%," National ACM Secretary Kathleen Wagner said.

Election Hones Rivalry Between Factions

By Jeffry Beeler
CW West Coast Bureau

Analysis

Murmurs of political discontent are again filling the air as the Association for Computing Machinery (ACM) nears the climax of its latest election for national offices.

This year's election, like many of its predecessors, has sharpened the purported rivalry between what many ACM insiders see as the association's two main political factions — the "practitioners" and the "academicians."

Candidates and their sympathizers on both sides of the factional dividing line are again accusing each other of gaining an unfair advantage during the current election campaign.

Small Controversy

One candidate, for example, found himself at the center of a small controversy when he was allowed to publish a 40% longer ballot statement than any of his opponents.

Another contender for the same office is thought by some to have gained a slight upper hand when she wrote and signed the official ACM cover letter that accompanied her own and other candidates' ballot statements.

To add to the dissension, questions are again being asked about the organization's controversial editorial policy that requires official publications to be submitted to headquarters for advance review and approval. Several critics have blamed the review requirement for delaying, perhaps unintentionally, the publication of certain chapters' newsletters, possibly causing a serious setback for the chapter's movement.

How valid and serious all these complaints are is difficult, if not impossible, to gauge precisely. Within ACM itself, opinions on the question seem to vary widely.

But the intensity of ACM's political squabbling has grown noticeably since the association's latest election campaign shifted into high gear.

At stake in the election are some of ACM's most important national and regional offices, including members-at-large positions and the three seats that form the association's executive committee. Also on the ballot are several referenda, including a proposed constitutional amendment that, if passed, would expand ACM's 25-member national council to include a chapters representative.

Main Ingredient

The main instrument of ACM's latest national election is a batch of about 30,000 paper ballots, which were mailed from the association's New York headquarters in mid-April. The ballots, which went to ACM voting members throughout the U.S., are now being marked and will have to be returned to the main office by May 17, two days before the votes are tallied.

This year's exchange of election-related complaints and countercomplaints is by no means ACM's first encounter with political discord. A similar flap developed in 1980 when former ACM President Herb Grosch, then a candidate for member-at-large, accused the association of censorship for deleting portions of his ballot statement [CW, April 7, 1980].

ACM denied the censorship charge and defended its actions on the grounds that the deleted material constituted "electioneering," which its policies expressly forbid.

But the latest round of internal grumbling has acquired a special significance because it heralds a possible shift in the composition of the organization's executive committee. For perhaps the first time in ACM's history, the group's practitioner faction stands at least a reasonable chance of winning an electoral majority in the executive committee. If control of the committee does change hands, one of ACM's most powerful governing bodies would again reflect the composition of the association's general membership, which during the last few years has been populated increasingly by practitioners.

User Spending Seen Rising 18%

By Lois Paul
CW Staff

FRAMINGHAM, Mass. — Data processing end-user spending is expected to increase by almost 18% in 1982 to almost $78 billion, according to a recent research report published by International Data Corp. (IDC).

The firm's latest annual user spending survey reportedly revealed that the greatest portion (approximately 44%) of overall DP spending involves personnel-related management information systems (MIS) expenses such as salaries, travel and training. Computer room equipment — including maintenance expenses incurred by MIS departments — are expected to represent the second largest budget category at approximately 25% of overall expenditures.

The most significant growth in U.S. DP user spending by budget item was in the area of data and voice communications, which is projected to increase by about 31% to almost $7 billion by the end of 1982, the researchers found. Spending on data entry and terminal equipment is expected to reach nearly $5 billion.

User Spending Survey and Forecast was written for clients of IDC's Corporate Planning Service. The report is available to nonclients at a price of $3,000. Further information can be obtained by contacting Laura Greenfield, IDC, 5 Speen St., Framingham, Mass. 01701.

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ICA Debates Fate of BOCs' Installed Equipment

By Phil Hirsch
CW Washington Bureau

CW at ICA

NEW ORLEANS — There was extended debate here last week about the eventual fate of the vast installed base of terminal equipment now owned by Bell operating companies. But panelists at the International Communications Association's (ICA) 35th annual conference agreed that the final decision will have a profound impact on telecommunications users' pocketbooks.

The immediate focus of debate was a provision of the settlement agreement negotiated last January by AT&T and Justice Department lawyers that requires the operating companies, upon divestiture from AT&T, to transfer ownership of all installed terminals to their former parent.

In contrast, the Federal Communications Commission (FCC) has chosen a "bifurcated" scheme under which AT&T, beginning next January, would be allowed to market and maintain new terminal equipment, while the operating companies would temporarily retain their embedded terminal base until it was disposed of by sale, auction or some similar means.

Kent Nilsson, legal assistant to FCC Commissioner Henry Rivera, explained that under present telephone industry accounting rules every dollar of net revenue earned from the sale of embedded customer premises equipment reduces the operating company's rate base, and thus its rates. As a result, the operating companies have a strong incentive to junk this equipment instead of selling it. This move would allow charging to their rate base the cost of removing the terminal equipment from the customer's property. While this could produce some increase in rates, Nilsson indicated that the agreement negotiated by Justice Department and AT&T lawyers would be far more expensive.

Like the operating companies, AT&T could junk the older terminals in its newly acquired customer premises equipment base and hike its rate base to reflect the costs of removing this equipment from each customer's property. But it would be vastly more profitable to keep this old equipment in place while raising the related charges, for then the price gap between the already installed terminals and newer, more efficient equipment would decrease, and the affected customers would be motivated to migrate from the former to the latter, Nilsson continued. The FCC official insisted there is ample evidence to show that this "installed base migration strategy" is an adopted AT&T policy.

"AT&T and Bell System documents which have been subpoenaed in state rate cases leave little doubt" that the phone company "has carefully and systematically engaged in efforts to migrate the customers of its operating companies. Several state commissions have concluded that migration is adverse to the public interest and have begun to take steps to protect their ratepayers."

Larry Dooling, an AT&T marketing director, countered with the argument that AT&T has only 50% of the terminal market and "can't raise prices indiscriminately." If customer premises equipment is being retired early, he added, it is because the equipment has become too expensive to maintain, not because of price pressure from AT&T.

Contests, Prizes Highlight Show

(Continued from Page 1)

crofiche system, held a number of drawings to give away nylon racing jackets emblazoned with the company's logo.

The NMA itself got into the act by permitting a local high school band to perform outside the Cervantes Convention Center just prior to the exhibition floor's opening. NMA also had a four-man U.S. Marine color guard kick off the lunchtime keynote address.

Still, the majority of the nearly 125 firms at the show stuck with the traditional floor promotions of balloons, buttons, stickers and plastic bags.

One company, however, unwillingly had the most embarrassing giveaway on the show floor — its name.

Burroughs Corp., a first-time exhibitor at the show, had a small booth on the edge of the show floor where it quietly displayed its line of micrographics papers. Unfortunately, the firm's name, which was brightly displayed over the booth, identified the company as "Borroughs" instead of Burroughs.

Within hours after the show floor was opened to the public, the offending sign quickly disappeared leaving a string of light bulbs in its place.

Correction

The correct issue number for the March 22, 1982 issue of *Computerworld* is No. 12 rather than No. 11 as published.

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Honeywell Adds Network, Packet Switchers

(Continued from Page 1)

with significant communications needs, the Roadrunner combines private voice and data networks along with two-way full-motion color video teleconferencing, electronic mail, message systems and high-speed facsimile into one common digital network, the vendor said.

The product features all necessary interfaces for integration from low-speed data to T-1 and packet data switching. In addition, high-speed digital facilities used for video teleconferencing can be shared with other voice and data requirements for economy with this system.

The Roadrunner reportedly improves network reliability with features such as automatic circuit testing and offers management and control functions for allocating costs back to users. The network integration features allow users complete freedom in selecting any private branch exchange system, common carrier and DP vendor. The system can combine the needs of many departments onto one network, while enabling them to maintain their individuality in telecommunications, the vendor claimed.

A nationwide, multinode Roadrunner Digital Edition will cost between $2 million and $5 million and will be available this fall, according to a Honeywell spokesman.

Action/Honeywell, in conjunction with Sesa-Honeywell Communications, Inc., also announced the DPS25 Distributed Packet Data Switching System, a message-handling system that interfaces, connects, concentrates and provides X.25 protocol conversion for a variety of office automated terminals.

The packet switch will share network trunks on the Roadrunner system, which provides additional circuit augmentation when demand reaches the point where more data transmission capacity is needed, Sesa-Honeywell President Jack Pendray said.

Prices for the DPS25 begin at $14,000 and go up to several million dollars, the vendor said.

Honeywell/Action is based at 4401 Beltwood Pkwy. S., Dallas, Texas 75234.

Other Introductions

Several other companies introduced products at last week's ICA exposition. Rixon, Inc. unwrapped the TA212A modem, a Bell-compatible, single-card large-scale integration design that transmits and receives serial binary data in full-duplex mode over the two-wire DDD switched network, the vendor said.

Operating options reportedly include up to 300 bit/sec asynchronous in the low-speed mode and 1,200 bit/sec synchronous or character asynchronous in the high-speed mode.

The TA212A costs $795 and will be available in June. Rixon is located at 2120 Industrial Pkwy., Silver Spring, Md. 20904.

General Dynamics Communications Co. unveiled its NP9000, a system that collects telephone call records from remote locations and stores the information on two magnetic tapes at a central point. Each tape can store up to 435,000 call records, according to a company spokesman. The NP9000 was described as a multitasking, multiprocessor data collection and distribution system, designed for sophisticated telecommunications and data network applications. The system features a fully unattended mode of operation, includes time-of-day polling and executes 20 simultaneous polls, the vendor said.

A typical system would cost about $80,000, a company spokesman reported. General Dynamics is headquartered at 12101 Woodcrest Executive Drive, St. Louis, Mo. 63141.

DPMA Region 7 To Meet May 19

MEMPHIS, Tenn. — The Data Processing Management Association's (DPMA) Region 7 conference will be held here May 19-21 under the sponsorship of the Memphis DPMA chapter.

Region 7 includes the South-Central and Southeast states and reportedly contains nearly 4,000 DPMA members. The conference will include a vendor exposition and trade show, and all events will be held at the Holiday Inn Rivermont in Memphis.

Heading the list of conference speakers is John C. Whitmarsh, editor of *Computerworld*, who will present the keynote address. Other speakers include Tom Kenny from IBM, who will discuss "Man and Machine — Merging Paths," and Dr. Joseph L. Mancusi of the Veterans' Administration's Psychology Service, who will discuss "Managing Executive Stress: Are You Dying to Do a Good Job?"

The pre-registration fee for the full two-day conference is $90 for DPMA members. At-the-door registration for members will be available for $100. Full nonmember registration is $125. Further information and registration materials may be obtained by contacting Bob Hiltenbrand, conference chairman, at DPMA Region 7 Conference, P.O. Box 41643, Memphis, Tenn. 38104.

THE LEADING EDGE

#2 in a series of reports on new technology from Xerox

Few inventions have proved more versatile than the laser.

It has been used as a super signal lamp for space communications. It has found a role in exotic metalworking applications, and the incredible precision that it offers has made new kinds of brain and eye surgery possible.

A system for playing TV shows from phonograph-like disks uses a laser to "read" the recorded program material.

Lasers are used in various forms of measurement and information handling systems. For example, one version of the bar-code reader used in supermarkets employs a laser scanner.

The Hologon Laser Scanner is one of the latest developments in practical applications of laser technology. It was invented by Xerox optical physicist Dr. Charles Kramer who wrote this article.

Lasers In Electronic Printing

At Xerox we use lasers in electronic printing systems that are based on xerography. Instead of making copies of existing documents, such printers create documents, drawing on information stored in a computer. In such a system, signals from the computer pulse the laser beam as it scans across a light-sensitive drum or belt that serves as the "camera film" in xerography. The image recorded in this way is then developed and transferred to paper as in a copier.

Laser electronic printers offer the quality of offset printing with significant versatility compared with conventional computer printers. There is virtually no meaningful limit to format or to type style or size. Pictorial or other graphic material can be printed as easily as text. Arabic, Greek or Russian alphabets—even Oriental ideograms—are within its capabilities, provided appropriate programming is fed into the printing system.

Equally significant is the fact that, with electronic printing, documents originated in one location can be printed simultaneously at a number of different locations.

Xerox currently offers three such systems. The 9700 electronic printing system turns out almost two pages per second and has almost unlimited flexibility when it is used with the Xerox Integrated Composition System program. The 5700 electronic printing system is up to 40 times faster than conventional word-processing printers, which it can replace, and it can also be used for electronic mail and remote computer printing. A similar printer is offered as part of the Xerox 8000 network system. Designed for lower-volume applications, it is twelve times faster than a conventional word-processing printer.

In these printers, the scanning action of the laser beam is created by a relatively complex opti-

Optical Disks, Retrieval Systems Hot

Crowds Mark Success, But Few Product Surprises

By Tim Scannell
CW Staff

ST. LOUIS — If success can be measured by the size of the crowds, the National Micrographics Association's (NMA) 31st annual conference and exposition here last week was a triumph.

However, there were few surprises on the exposition floor. What generated the most excitement among attendees were optical disk storage and retrieval systems — a fast-growing, nonmicrographics technology that could someday push traditional micrographics out of the limelight, according to a number of exhibitors at the show.

At an invitation-only briefing held at the same time the NMA opened its show floor, 3M Co.'s Micrographics Products Division demonstrated what is said to be the first workable direct read-after-write (Draw) optical disk system. Last week's private screening is reportedly the first time the system has been demonstrated in the U.S., according to a 3M spokesman.

The system, manufactured by the Japanese firm Toshiba, consists of a scanner, an optical disk drive and a workstation with a CRT terminal and laser printer. Once documents are scanned and stored on the laser disk, which closely resembles an ordinary phonograph record, they can be recalled in less than a second. Users can view one piece of the document and even mingle the picture with data — an impossibility for micrographics, Edward J. Westlund, 3M's manager of advanced systems research, explained.

CW
At NMA

Currently, up to 5,000 images can be stored on each side of an optical disk, but that capacity is expected to increase by a factor of from 10 to 100 as disk densities become more and more compact.

Although the Toshiba system is not yet on the market, and an American distributor has yet to be selected, a 3M representative expects the system to sell for around $125,000. That same person, who declined to be identified, claimed that optical disk technology will outdate micrographics equipment — a substantial part of the firm's business — in less than 10 years.

Covering All Bases

By acquiring the Toshiba system and investigating optical disk technology, 3M is "covering all its bases" rather than abandoning one technique in favor of another, a second 3M spokesman said. To reaffirm that policy, the Minnesota-based firm demonstrated a still experimental microfiche image retrieval unit that uses a carousel-like device loaded with microfiche and computer-aided retrieval next to the optical disk system.

Just as 3M is reportedly devoting a substantial portion of its research and development budget to optical disk technology, so are other companies preparing for the possibility that optical disks will do for micrographics what word processing has done for the standard typewriter.

RCA Corp., for example, is currently developing an optical disk record-with-instant playback system that could handle hundreds of optical disks at a time with a method not unlike that used by a jukebox. The system could reportedly store up to 200G bits of data.

In a last-minute decision to show-off its optical disk technology and research, RCA scrambled to erect a booth on the NMA's show floor, Charlie Meyers, an NMA spokesman, said. Although there was no hardware to demonstrate, RCA had basic schematics, plans and a representative to answer technical questions.

Also establishing its turf in optical disks, Eastman Kodak Co. — through one of its companies, Spin Physics, Inc. — presented a full-day seminar on optical disk technology at the convention.

Not Seen As Threat

While many firms are reacting to the technology, which is proving to be this year's hot topic, optical disks are not seen as a threat to micrographics by the micrographics equipment vendors, NMA's Meyers maintained.

Once fully developed, optical disks will be an appropriate technology for high-volume users who need the storage capacity and can afford the currently high prices. But smaller users with fewer needs will probably opt for traditional photography-based micrographics, he said.

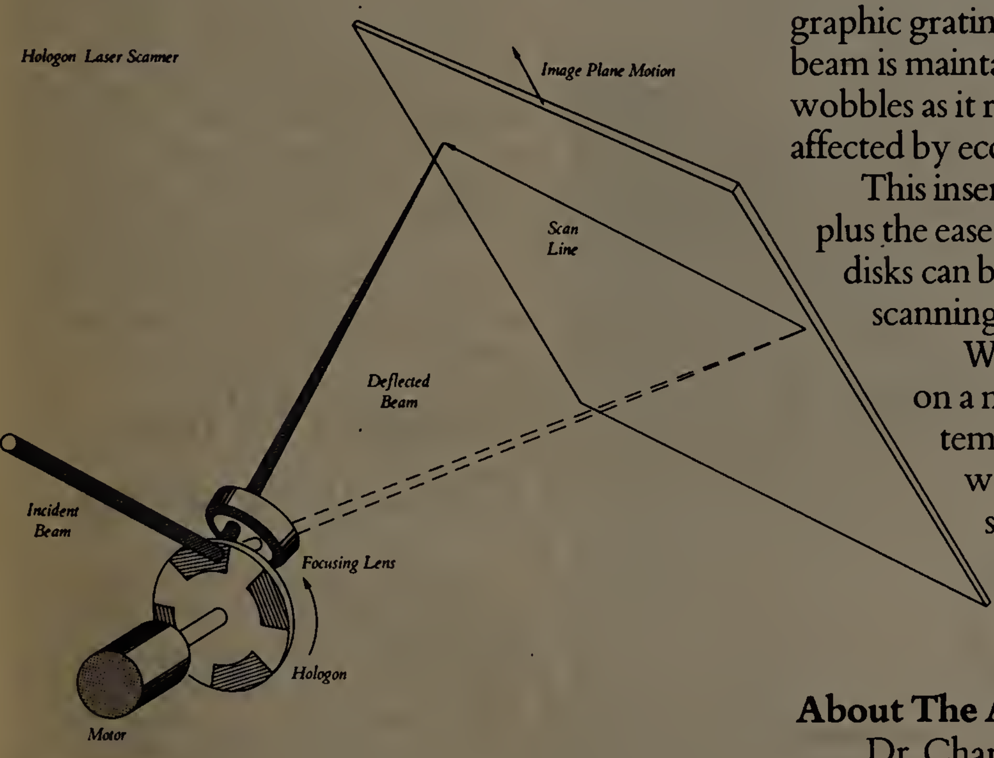
However, the coming of optical disks might hold up the decision process on micrographics systems just as several years ago many people delayed switching from a black-and-white to a color television until the technology improved, he said.

cal system that is based on a rotating, polygonal prism. Extremely high precision is required in such a system. This complexity and precision make such a laser scanner relatively expensive.

The Hologon Laser Scanner

To simplify laser scanners and reduce their cost, we considered holography to perform the functions of costly lenses and prisms.

Holographic recordings, best known for their reproduction of three-dimensional images, take the form of gratings—corrugated or ridged patterns on a transparent medium, having a spacing of approximately twenty millionths of an inch. In pictorial holograms, these gratings contain the recorded cross section of the wavefront of light that had been reflected from the pictorial subject. When coherent light—usually from a laser—is transmitted through such a hologram, a true three-dimensional image of the subject is reproduced.



However, the holographic gratings used in a Hologon scanning system do not contain pictorial information. Only the optical diffraction properties of the gratings are utilized.

The Hologon System is one of several holographic approaches to scanning. But the others tend to scan in an arc-like pattern which is unsuitable for electronic printing, which requires a straight-line scan, much like the raster pattern used in television to create an image. The Hologon approach gets around this problem through a novel configuration.

In a Hologon, a series of holographic gratings are formed around the circumference of a transparent disk. A laser shines through these gratings as the disk rotates. The gratings diffract the laser light, and the rotating action causes it to scan across the surface on which it is focused, as shown in the accompanying diagram. Focusing is done by a simple, inexpensive lens.

The laser beam in this system is aimed so that it forms a nominal 45° angle to the Hologon's surface as it enters a grating and a 45° angle as it emerges from the grating. In other words, it is diffracted through a right angle by the gratings. This angling results in a straight-line scan.

Because of the optical properties of the holographic gratings, the 90° diffraction angle of the beam is maintained even if the Hologon surface wobbles as it rotates. The beam angle is equally unaffected by eccentricities in the rotating disk.

This insensitivity to mechanical variation, plus the ease and low cost with which Hologon disks can be produced, make a Hologon laser scanning system relatively inexpensive.

Work is currently underway at Xerox on a new generation of laser printing systems utilizing the Hologon laser scanner with all its attendant benefits. This should enable Xerox to make the advantages of electronic printing more widely available than ever before.

About The Author

Dr. Charles Kramer is the inventor of the Hologon Laser Scanner. He is an optical physicist specializing in electro-optical reading and printing devices at the Xerox Joseph C. Wilson Center for Technology in Rochester, New York.

He holds a Bachelor's degree and a Master's degree in Physics from Fairleigh Dickinson University and a Master's degree and Ph.D in Optics from the University of Rochester.

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AT&T Payment Proposal Could Save Users Cash

By Phil Hirsch
CW Washington Bureau

NEW ORLEANS — AT&T announced a number of changes in its Variable Term Payment Plan (VTPP) here last week that may save money for some Dataphone II and Dataspeed 4540 users. Concurrently, the phone company unveiled a new system management plan, featuring greater customer involvement, which could reduce nonrecurring installation charges as much as 35%.

The VTPP changes must be approved by state regulatory commissions before they can become effective, a Bell spokesman said. He expects the necessary tariff amendments to be filed by July 15.

CW at ICA

One change permits customers to defer all nonrecurring terminal charges, covering such items as installation, moves and configuration changes, over the full life of the VTPP contract. Previously, only 50% of these charges could be deferred for no more than one year. The user is charged interest on the deferred balance. The rate is now 18% and is adjusted quarterly.

Another change expands the VTPP prepayment option. Formerly, it was available in only some areas served by the Bell System, and no discount was offered. Now, assuming state regulators agree, all Bell operating companies will allow prepayment and the user will receive a discount amounting to .375% for each month he pays in advance. The option was designed to benefit those organizations that have a surplus at the end of their fiscal year and must either spend it or lose it, an AT&T spokesman explained.

The phone company also made it easier for customers with Two-Tier Payment Plans to upgrade their systems.

Now, even minor modifications to terminals covered by this plan invalidate the contract and force the customer to pay VTPP rates. Typically, the customer is on the second tier of the two-tier plan when this happens and is paying much less for his already-installed equipment than he must under VTPP. AT&T now says that the customer who is on the second tier of a Two-Tier Payment Plan can make much more extensive changes to an existing installation without having to pay higher charges for the already-installed equipment. The net effect, the spokesman said, is to reduce the cost of upgrading older AT&T terminals.

One other change made in the VTPP adds a two-year and a six-year term to the contract period. Presently, VTPP is available only on a monthly or four-year basis.

Initially, the phone company said, the new VTPP terms will be available only to some users of Dimension private branch exchange (PBX) equipment.

At a press conference during the International Communications Association conference, however, Robert Casale, national director of business sales, said the two- and four-year terms would eventually be added to data terminal equipment.

For those Dimension PBX users who qualify, the six-year VTPP contract means a 10% reduction in their monthly charges, compared to the four-year plan, and a 46% reduction compared to the monthly plan — which suggests the savings possible for data terminal users when they become eligible.

The new system management plan, which does not require regulatory approval and can therefore be implemented immediately, allows AT&T customers to perform their own moves, keep their own terminal records, perform their own terminal translations and receive a 35% reduction in nonrecurring terminal charges. There is also a "full order" version under which the customer moves his own equipment and keeps his own records, with AT&T continuing to handle station translations.

Hogan Wins Dewar Award

NEW ORLEANS — F. Thomas Hogan, director of communications with Monsanto Co., was awarded the 1982 Stewart R. Dewar Award for Telecommunications Professionals. The presentation was made during the International Communications Association's (ICA) 35th annual conference and exposition here last week.

Hogan served on the ICA's board of directors from 1973 to 1980 and was the association's president in 1978.

Upon accepting the award, Hogan called the event "an emotional moment," remarking that "I recently had to testify at the [AT&T] hearing — and I wasn't nearly as nervous."

The Dewar Award was established in 1974 in honor of the founder and first ICA president. Each year it is presented to that ICA member who has made a unique and creative contribution to the association or to the field of telecommunications, which enhances the stature of the profession and/or the association.

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Due to Industry Restructuring

ITT Exec Eyes 'Tough Times' for Managers

By Susan Blakeney
CW Staff

NEW ORLEANS — Tough times are ahead for communications managers, according to George F. Knapp, vice-president of ITT.

Keynoting the International Communications Association's (ICA) 35th annual conference and exposition here last week, Knapp was referring to the current communications industry restructuring with respect to the proposed AT&T antitrust settlement, and what he subsequently sees as an expanded role for the communications manager.

"In just 40 years," he observed, "the combative and curious nature of man has deposited upon our doorstep a panoply of electronic devices and tolls."

Stating his belief that the industry has the ability to provide "virtually any communications service desired . . . at a cost/benefit ratio to satisfy the most stringent economic requirements," Knapp maintained that "given this vast wealth of technological capability and the awareness of the power embodied therein, is it any wonder that the historical institutions of the marketplace are undergoing radical change?

"Is it any wonder that our elected representatives are in the process of attempting to change the ground rules of the relationship between the hardware and service markets and the suppliers who serve these markets?

"Is it any wonder that when these revised relationships have been disputed in the courts that the decisions almost invariably reinforce the obvious benefits to be derived from increased competition and the elimination of obstacles to market entry?" he continued.

Furthermore, Knapp said that these changes were bound to be opposed by the monopolists, but he expressed approval of ICA's stand on the AT&T issue.

Industry Restructuring

Predicting a rapid restructuring for the communications industry, Knapp maintained that advocates for a healthy competitive environment working in combination with "reasonable legislation and fair judicial decision" will culminate in a "new established order."

For the supplier, Knapp contended that the shifting in the marketplace places an "obligation" on vendors to succeed.

He maintained that suppliers have traditionally been guilty of selling wares to businesses without any concern about the products' overall cost/benefit relationship to the customer. "The automation of the office now places a new requirement on us both to delve much deeper into that relationship." Suppliers will adapt "a more holistic view of your business, its tasks, problems and costs," he told the ICA attendees.

"A second implication for your future role deals with the management of an explosion of ideas," Knapp predicted. "You may find yourself in a variety of trials with several vendors testing each one's proposed solution to your particular problem. I think you should accept such offers to examine new ideas with potential suppliers, for then we will both learn and benefit."

CW at ICA

Knapp suggested that suppliers "have to run to catch up to your [manager's] understanding of the impact of the automated office on your business," but maintained that managers and suppliers should become "allies in the battle for increased efficiency."

CW Photo by S. Blakeney

George F. Knapp

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OA Needs Recently Incorporated

Future Seen Today in Third-Generation PBXs

By Phil Hirsch
CW Washington Bureau

CW at ICA

NEW ORLEANS — Although the automated office is still on the way, most of its characteristics are well known and at least some of its communications requirements have been incorporated into recently developed "third-generation" private branch exchange (PBX) systems, according to Jerry A. Goldstone.

Speaking at the 35th annual conference of the International Communications Association (ICA) here last week, the publisher of Business Communications Review said that the primary goal of automated office designers is to increase the productivity of managerial, technical and professional staffs. On the average, 59% of their working time is devoted to meetings and 27% to desk work.

The basic idea is to develop systems that provide faster access to stored information, reduce the need for staff personnel to attend meetings away from their offices and eliminate the delays inherent in relying on typewritten messages and conventional telephone calls, he said.

On-line terminals of several different types have been developed to provide these improved capabilities, Goldstone added, but making these devices effective requires interconnection, switching and a host of related capabilities.

As a result, the distinguishing feature of the third-generation PBX is that it provides more than switching, he maintained. Recently developed products, among other add-on features, perform speed/code/protocol conversion. In addition, these products permit station access lines and switch channels to be reconfigured to handle data and voice alone, alternately or simultaneously and also incorporate least-cost routing, call management, security and directory services.

Available and announced third-generation PBXs differ substantially in architecture, according to Goldstone. Intecom, Inc.'s recently announced IBX concentrates switching and related functions such as speed/code/protocol conversion in a central unit. Most other third-generation PBXs, by comparison, utilize distributed architecture. Some systems, such as Datapoint Corp.'s ISX, interface with local-area networks. "This is an idea that's likely to prove popular," Goldstone said.

There is also a good deal of variation in the data-handling capabilities of third-generation PBXs, he added. One of the early systems, Northern Telecom, Inc.'s SL-1, requires separate ports and two full voice channels through the switch to handle data and voice signals from the same station. Another system of the same vintage, Rolm Corp.'s CBX, can carry only low-speed data on the same channel with a voice signal. In newer systems offered by such companies as Lexar; Anderson Jacobson, Inc.; Datapoint; and Siemens Corp., 128K bit/sec of digital data can be accommodated by each port. Thus, individual access channels can carry up to 56K bit/sec of data simultaneously with voice on a single channel with the other 8K bit/sec required for control information.

Settlement Proposal Brings Protests From ITT Brass

NEW ORLEANS — AT&T's proposed antitrust settlement with the Justice Department has two serious defects that could be counterproductive to a healthy, vigorous communications industry, according to George F. Knapp, a vice-president of ITT.

In the keynote address before the International Communications Association's annual meeting here, Knapp detailed ITT's strong objections to the proposed settlement.

Knapp said the proposed settlement would threaten the viability of the Bell operating companies by stripping them of profitable operations, such as the local yellow pages directories and intrastate long-distance service, and by transferring ownership of the customers' telephone equipment to AT&T. As a result, the local companies could face poor earnings, have difficulty in attracting capital and be forced to charge higher prices for local service, he maintained.

ITT also objects to the proposed settlement, Knapp said, because of the continued possibility of cross-subsidization between AT&T's regulated interexchange services and its unregulated endeavors.

"The unfettered ties to Bell Laboratories and Western Electric risk inappropriate cost allocations and pricing distortions to the detriment of both customers and competitors, which is clearly not in the public interest," Knapp said.

DP/MIS Eyed as Favorite in OA Supremacy Race

By Bruce Hoard
CW Staff

MIAMI — DP/management information systems (MIS) departments are the favorites to emerge with control from the battle for supremacy over office automation, Alexandra Corson said at the International Data Corp. 1982 Spring Executive Conference here last week.

"DP/MIS has the power to manage office automation, but in the past they have tended to serve technology rather than the needs of people and information," Corson, program director for Strategies for Office Systems Program at IDC, observed. DP/MIS will grab at least temporary power because it is easier in these tight economic times to give control to that segment of corporate management which is "relatively stable, organizationally powerful and technologically inclined," Corson commented.

Administrative management departments will also be in the fight, she said, noting these managers generally understand the needs of people and have the advantage of being distanced from the vested interests of individual organizational groups. However, this group tends to opt for "tidy," "big picture" answers that may conflict with specific individual needs.

Telecommunications departments also figure prominently in the battle, the program director said. The telecommunications manager's blessing is essential to the development of effective networks and as systems become more integrated, they can be expected to gain corresponding influence. Despite that growing influence, she added, "to date, telecommunications managers have tended to take only passing interest in the office automation dogfight."

Finance departments are heavy hitters with the ability to stop any incipient office system in its tracks, Corson claimed. Nonetheless, these executives remain content to pull the corporate purse strings from behind the scenes.

She praised office systems management personnel for understanding both human needs and the idiosyncracies of the office. However, these managers have too narrow a focus to deal with the onslaught of office technologies and even more important, they lack corporate clout.

Records management departments are also on the peripheral of the battle, but are also too specialized and task-oriented to take control, according to Corson.

She emphasized that DP/MIS does not have a lock on office automation development, adding there are "creative alternatives," pointing to corporate vice-presidents of office systems who have come out of the controller's office and some personnel managers who have been named directors of office systems.

"The opportunities are wide open for anyone who dares to take the risk," Corson declared.

The need to link the DP and office automation spheres has placed increasing pressure on existing technical staff, Corson said, noting that they are asked to respond to global information needs of end users. Those needs include instantaneous access, user transparency and the conversion of data formats.

MIS groups may react defensively to the growing burden by refusing additional responsibilities. Corson suggested that the way to deal with that is to go on the offensive and establish groups charged with "creative marketing" of the new technology, products and consulting services.

Her other suggestions included encouraging the business use of personal computers within reasonable limits, establishing guidelines, which will assist potential clients in measuring the baseline productivity of work products and, where appropriate, replacing stand-alone word processors with clustered terminals.

Research Head Praises EOS

By Jim Bartimo
CW Staff

MIAMI — Office automation is "just another computer application," according to James G. Steward, manager of computing research at Amoco Production Co.

Characterizing himself as a strong supporter of mainframe-based office automation, Steward spoke of continued success with a system he has used for four years. He made his comments during International Data Corp.'s 1982 Spring Executive Conference here last week.

Steward's department provides computing facilities and technology for scientists, engineers and support staff engaged in research for the exploration and production of oil and gas, he said. All 740 people in Amoco's production research department have access to the IBM Electronic Office System (EOS), he explained.

EOS runs on an IBM 3033 mainframe and two IBM 4341 computers. The system is accessed through IBM 3270 terminals and other graphics and special terminals. One reason for using the 4341 is that is functions as backup if the mainframe goes down, Steward explained.

(Continued on Page 16)

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Conference Keynoter Critical of OA Scene

By Bruce Hoard
CW Staff

MIAMI — Office automation is suffering from too much technology and not enough conceptualization, Michael J. Samek told attendees at the International Data Corp. (IDC) 1982 Spring Executive Conference during his keynote address here last week.

Samek, vice-president of administrative services at the Celanese Corp. and an admittedly "critical" viewer of the office automation scene, noted that word processing is the only office automation technology that has moved from buzzword status to successful implementation. Other office technologies such as electronic mail have fallen prey to the wrong combinations of technology and conceptualization, he maintained.

If an idea is not well conceptualized before it is blended with technology, "you basically have a problem," Samek said. The end result of such a situation is "buzzwords, revolving doors and traumas" for the people who tried to implement the idea.

Instead of relying on buzzwords, users should ask themselves about the reality of office automation issues, he said. However, it is buzzwords rather than reality that frequently emanate from the executive suites where critical decisions on office automation are usually made, he added.

Samek declined to give office automation a stringent definition, preferring instead to say it is "more than word processing and less than an IBM 3081." He said it should embrace a variety of functions such as file storage and communications and be flexible enough to operate in a variety of environments.

The basic sales pitch for office automation is increased productivity, he observed, adding "it's got to have a payoff. If it's got a payoff, you can justify it." However, the problem with payoffs is that sometimes they cannot be determined on a "dollar-driven analysis" basis. Even regular computers may fail the zero-budget justification test, he said.

Business schools are adding to the problem by turning out graduates who make up for a lack of practical experience by theorizing their way through situations. If a manager takes the business school approach, he will "know the cost of everything and the value of very little," Samek said.

The real keys to office automation productivity are the degree to which managers get involved and the style with which the involvement is blended.

An office automation system will not succeed without management's commitment, Samek said, adding that the overall style of the company should not be altered to facilitate the new technology.

When considering an office automation strategy, keep in mind that there is no "cookbook" formula to follow, the vice-president declared. Each company must fashion new systems around its own particular environment. With between 68 and 100 vendors from whom to choose, the selection process becomes complicated, he admitted.

He warned managers against a nonparticipatory approach to the equipment selection process, saying that this invites bringing all kinds of devices in "over the transom." Such problems were common in "the early days" of DP, he noted. Because no one vendor can offer everything in the way of a total office system, Samek also told audience members that they have no choice but to become multivendor shops.

The way to deal with vendors is to carefully research company needs and then select a small number of vendors to fill those needs, he said, adding that training is an important aspect of the total package. The burden of equipment selection should not fall on an overworked, and sometimes apathetic, word processing department. The right department for the job is DP because "I think they know more about technology and its pitfalls than the average non-DP person," he said.

Despite claims to the contrary every office machine does not have to be capable of talking to every other machine, according to Samek. Creating such a scenario means "total chaos," he declared.

Research Head Notes Success With EOS

(Continued from Page 15)

Using EOS came as the result of a research experiment to find ways of reducing rising office costs and improving office productivity, he said. After using the system, Steward said, "We knew we were going to stay with it, even if IBM didn't."

EOS is a computer-based system used to create, communicate, store, retrieve and control text and data, he explained. Uses include electronic mail, electronic messages and word processing.

"You have to make a distinction between electronic mail and electronic messages," he said.

Steward defined electronic mail as formal communication, memos, letters, reports, documents and preset formats. A major concern of the electronic mail experiment was whether or not management would use the system.

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Crime Reports Increasing

Reports of Computer Crime Rising in Japan

By Jim Bartimo
CW Staff

"I am calling from the computer center," a man's voice on the telephone said. "I am going to check the computer because there is something wrong with it. A test operation will be undertaken by transferring a sum of 35 million yen [about $147,000] to the account I am designating now."

The Japanese bank clerk who took that call had no reason to believe the caller was not from the bank's business administration department, so he transferred the funds to the designated account. Moments later, the caller's female accomplice withdrew about $126,000 from the account — which belonged to the caller.

This case, still under investigation, is taken from a report by the Japanese National Police, according to DP scam expert Donn B. Parker of SRI International in Menlo Park, Calif. What allegedly happened illustrates the ease with which computer crime can take place in Japan.

Computer Crime on Rise

"As far as the police are concerned, computer crime is on the rise," Parker said. "Whether there is a true rise is problematic.

"For all we know, computer crime may be going down," Parker said, "but the reporting is going up. White-collar crime has never been reported because everybody loses face. The offenders were usually rehabilitated internally.

"Up until now, I don't think there was much concern," Parker said in an interview last week. But that has changed with the publicity surrounding recent DP-based crimes. "As a nation, the Japanese get very excited about a topic and then stick to it. The interest is driven by the media."

Recent DP Thefts

Witness some occurrences that, according to Parker, have received a great deal of recent coverage in Japan:

- A government engineer designed a set of data communications equipment to tap into the Nippon Telegraph and Telephone Public Corp. (NTT), Parker said. Because NTT provides commercial banks with data communications services, the engineer was able to obtain bank account numbers from the wire tap. He then used his own equipment to create magnetically coded cash dispenser (CD) cards and raid the accounts. He was caught after swindling more than $500,000, Parker said.
- By tapping into a computer with an off-line terminal, the deposit teller of an agricultural cooperative made deposits into her account by issuing bogus money transfer slips said to be from the cooperative's clients. The woman was arrested last September after swindling $350,000, according to the Japanese police report.
- A bank clerk obtained a blank card for accessing an automatic bank teller along with a client's memory number. He affixed the magnetic code onto the CD card and was able to withdraw $67,500 over a three-day period in 1981. He has since left the bank and the case is under investigation, the report said.

Crime Focused on CD Machines

Much of the computer-related crime in Japan focuses on some 25,000 cash dispenser machines that handle 60,000 bank accounts. The number of CD fraud cases known to the police rose from eight in 1975 to 288 in 1981. The incidence of other computer-related crimes has risen from one in 1971 to 10 in 1981, according to the Japanese police.

While the Japanese police have obtained a manual on computer crime investigation from the U.S. Justice Department, prosecution may be difficult even if the criminals are apprehended. "If someone stole a computer program on magnetic tape," Parker said, "they could only be charged with the theft of a $15 tape and not the program."

Why such a lenient charge? Japan has no copyright, patent or piracy laws. "I was talking with them [the Japanese] about the software boom that is just beginning to take place there," Parker said. "They have no criminal statutes to deal with these problems. A lot of them said these problems never occurred to them before. They said legislation is very slow to come."

Donn B. Parker

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Three-Step Plan Curbs Abuse in Aid Programs

CW Photo by J. Bartimo

HHS DP Head James Foster

By Jim Bartimo
CW Staff

WASHINGTON, D.C. — As DP head of the Department of Health and Human Services (HHS) of the Inspector General, James Foster, director of the Office of Advanced Audit Techniques, oversees a three-step process designed to curb abuse of federal and state programs.

He illustrated how the three steps come together with an example of a possible Medicaid fraud in Jacksonville, Fla. "We were trying to find out if some of the doctors there were billing twice for the same services."

The problem was brought to the attention of one of the programmer/auditors in the field and brought back to the central office for a computer-based solution. "The auditor asked how we could do this by computer. We wrote the program and then sent it out to a couple of other states for testing."

If the program had turned up a number of hits in the other states, it would be rewritten to be used for any state that requested it, Foster said. Sometimes the testing in other states proves that the problem is not widespread and the program is not generalized.

According to Foster, all programs developed in his office must be written so that "a junior-level Cobol programmer can understand how it works." Because the level of programming expertise varies from state to state, programs are designed at the most elementary level and redesigned by the state for their needs.

In an effort to avoid the communications gap that often arises between end users and programmers, HHS first established a network of auditors in the field and then taught them programming. "You have a case here of auditors talking to auditors," Foster said, "instead of programmers talking to auditors."

HHS Privacy Act Update on Way

By Jim Bartimo
CW Staff

WASHINGTON, D.C. — Is searching through a large computer file of names to find a small number of guilty people similar to searching a number of houses because the government knows there is a crime going on in one of them?

This question and other privacy issues often face the Department of Health and Human Services (HHS) when the Inspector General's Office searches a data base to locate possible fraud and misuse of government funds. HHS privacy act expert Hugh V. O'Neil said that a preliminary search is part of any investigation, but points out that newer, clearer guidelines are forthcoming from the President's Council on Integrity and Efficiency. "The goal of the council," O'Neil said, "is to promote the use of advanced technology within the proper [privacy] safeguards.

"If we're going to do this right, we're going to have to look at a lot of files. Since we're talking about a lot of data, we have to go beyond the privacy act and develop guidelines for matching." Guidelines for the use of data communications equipment are also currently under development, he said.

Because HHS deals with information from an individual's personal files, there are a number of privacy regulations that dictate how the information can be handled.

Guidelines set by the Office of Management and Budget and the Privacy Act of 1974 require that HHS keep the documents for the minimum amount of time and give proper evidence that an investigation is required. "We're not allowed to go fishing," according to James Foster, director of Advanced Audit Techniques.

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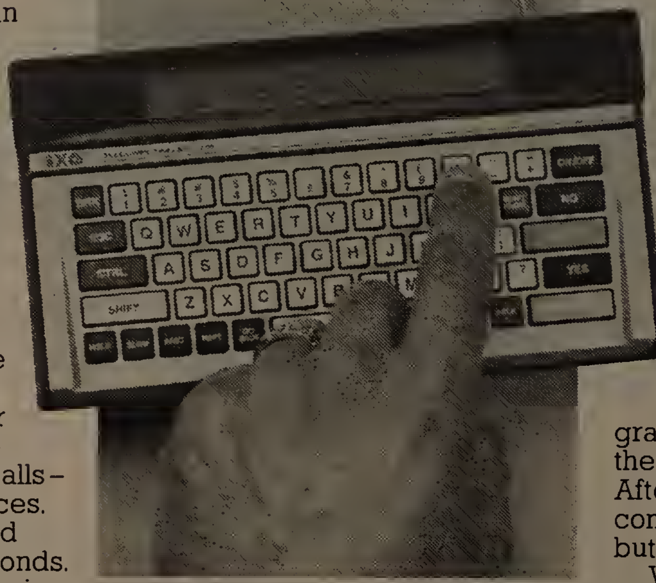

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Social Security, Medicaid Fraud Sliced

Machines 'Tame the Monster' for U.S. Agency

By Jim Bartimo
CW Staff

WASHINGTON, D.C. — "We have in this department perhaps the biggest collection of data processing material that you'll ever find in the world," Richard P. Kusserow, inspector general of the Department of Health and Human Services (HHS), said. "These machines just grind on — they are a big monster. You can't stop the monster with a man. The only way you can tame the monster is with another machine."

The monster to which Kusserow referred includes computer-based programs such as Social Security and Medicaid that account for some $240 billion, or 35% of the federal budget, according to the department's 1981 annual report. Often riddled by well-documented cases of fraud and misrepresentation by participants, these programs have lately come up against "data base matching" and other computer audit techniques, according to Kusserow.

Data base matching techniques have been used successfully to save federal dollars in several instances. For example:

- Matching Social Security Administration records against those for recipients of a program that gave benefits to the families of black lung disease victims. The match found that 1,200 recipients were deceased but still received payments. Overpayments of $4.6 million were identified and benefit termination was recommended for another 829 cases.
- Comparing a Medicare list of deaths against a Social Security list of recipients shows the names of dead people who are still receiving Social Security administration payments. This project recovered $4.8 million and may result in the prosecution of 183 cases, according to the department's annual report.
- Matching welfare rolls of 34 states and jurisdictions against each other to determine if welfare recipients are receiving benefits in more than one area. Some $6 million in overpayments involving 3,500 cases is estimated and the affected states will take administrative action or prosecution to recover the money, the report said.

While Kusserow said that $15 to $20 is returned to the federal government for every one dollar spent by the department, prosecution and recovery is but one part of the overall effort. "The by-product of the fraud investigation is a conviction," he said. "The purpose of the investigation is to examine the process that gave rise to the opportunity for fraud."

Kusserow said that data base matching is part of a three-step process. The first is to identify the problem, the second is to find the fraud and the third is to eliminate the opportunity. "Otherwise, we can only look forward to more audits and more convictions," he said.

All three steps involve the DP end of HHS, a spokesman for the Office of Advanced Audit Techniques said. Director James Foster explained that three programmers in the central office and two programmer/auditors in each of 10 regional offices create software for each of the three steps on an as-needed basis.

Field auditors from Foster's office are told about cases of fraud or misuse in a state or federal program. A data base match is developed in the field or in the main office in Washington to identify the extent of the problem. Then the office attempts to create a program that will prevent it from occurring in the future.

Kusserow, a former Federal Bureau of Investigation and Central Intelligence Agency agent, gave the example of a computer match he worked on for the FBI to show how software could prevent fraud. A barber school in a 9-ft by 6-ft room was "educating" more than 1,000 veterans who were approaching the end of their Veterans Administration (VA) benefits. The bogus school was acting as a front for veterans to receive education benefits and pulling in a profit itself.

A software package was developed to limit any school to a certain number of veterans depending on its physical size. "When the number is exceeded," Kusserow said, "a bell goes off and tells the VA that something is wrong. With that software, we'll never have to go back and solve that particular case of fraud again. But, of course, there will be others."

Richard P. Kusserow

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MIS Execs Offer Mixed Views on Micro Growth

By Marcia Blumenthal
CW Staff

NORWALK, Conn. — Although management information systems (MIS) directors have mixed opinions about the proliferation of personal computers in user departments, a recent report estimated that some 213,000 personal computers are already at work in large organizations, representing about 21% of 1981 shipments of these systems.

About 45% of the MIS directors responding to the survey estimated more than 10 microcomputers were already installed in their organizations. By next year, more than half of these managers expect to see more than 50 micros in use in their companies, according to International Resource Development, Inc. (IRD), the research firm that conducted the recently published study.

IRD figured the average number of microcomputers at surveyed firms was 15 units at the end of 1981 and forecast that, on the average, there would be 91 units installed within each of these firms by the end of next year. More than 30 Fortune 1,000 firms were interviewed for the survey.

Despite mixed feelings on the growing use of microcomputers within large organizations (those with more than 100 employees), nearly 60% of the MIS managers polled said that a personal computer acquisition and utilization policy was in effect at their firms. And 80% of these managers said they were directly involved or planned to be involved in the procurement of personal computing devices.

Although few MIS managers advocated the widespread use of micros and expressed a desire for central DP control over these devices, they acknowledged they would inevitably become involved in micro procurement and standardization issues, IRD said.

There are undoubtedly some hidden and emotional forces surrounding the micro issue, IRD observed. "First, and perhaps most important, the increasingly sophisticated users of microcomputers within some departments of large organizations alrady have a better understanding of [micro] computers and operating systems than some of the so-called DP professionals within MIS departments."

Besides the prospect of some loss of control of the corporate computing function, the vast majority of MIS managers (75%) indicated that personal computers will be interfaced with the organization's computing resources in the not-too-distant future.

The survey showed that by 1985 most MIS managers thought they would be involved in the following activities related to personal computers:

- Coordinating central purchasing of, prescribing standards and reviewing the justifications for personal computers.
- Specifying network interfaces, security safeguards for microcomputer systems.
- Overseeing the use and standardization of software products.

Within the organizations studied, IRD estimated 51% of the personal computers would be used by professionals, 27% by managers and executives and 22% by clerical personnel.

Apart from spreadsheet and word processing applications, IRD estimated 30,000 microcomputer systems are currently in use performing dedicated customized programming functions and 45,000 units are being used for scientific and engineering applications.

One of the major limits on the 8-bit microcomputers now installed is the number of tasks that can be performed concurrently and the amount of work that can be done in telecommunications node. However, with microcomputer architecture becoming increasingly sophisticated — 16-bit word lengths and even 32-bit units on the horizon — vendors are fast working on networking capabilities that will permit multiple microcomputer networking.

Moreover, storage peripherals with higher densities and new data base software for micros are making these units more attractive for distributed data processing applications.

While personal computers have generally been purchased by individuals from retail outlets, as personal computers become part of corporate purchases in the future, vendors will take an "end-user" approach more associated with traditional system vendors. Of the microcomputer vendors surveyed, 70% indicated the use of direct sales force for marketing to large end-user firms was an effective means of distributing their products. This strategy appears to be critical as IRD estimated 40% of microcomputer shipments in the last part of this decade will be made to end-user organizations.

Although systems from Tandy Corp. and Apple Computer, Inc. have garnered most of the sales to large end-user organizations, IRD expects more traditional computer vendors such as IBM, Xerox Corp. and Hewlett-Packard Co. to woo end users with their personal computer offerings.

The report, *Microcomputers in Large Organizations*, costs $1,285 and is available from IRD at 30 High St., Norwalk, Conn. 06851.

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Consultant: Human Factor Important to MRP

By Susan Blakeney
CW Staff

CHICAGO — "Lots of materials requirement planning [MRP] education, lots of MRP software and lots of hardware have traditionally led to lots of failures."

This is the view of systems consultant Dick Bourke, partner of Bourke-Arnold Enterprises in Pasadena, Calif., who led a session entitled "Human Factor Considerations in Implementing a Manufacturing Information System" at the Information Management Exposition and Conference for Manufacturing (Info/Manufacturing) here recently.

Bourke believes that human considerations are too often overlooked in system implementation and stressed the importance of the practical application of behavioral sciences in project implementation. He suggested that project leaders "adapt [their] management style to the people [they're] working with. Be people sensitive. Do whatever it takes — if it takes going to the bar together after work — go.

"You don't have to a drunkard to be a good project leader," Bourke said. But to initiate a successful strategy for change, the project leader must exhibit "a willingness to be vulnerable to the actions of other people."

A person's initial reaction to finding out he has been assigned to a project team involves asking some internal questions, according to Burke, such as "Am I qualified for this spot? How much of my time is it going to take up? What will I have to do?"

All the emotional reactions are negative, Bourke maintained. Accordingly, instead of approaching these team members with the "Rah Rah Rah! We're going to implement MRP!" approach, Bourke urged project leaders to let people air their feelings at the outset of the project.

"Start out with a 'We can be more effective if . . .' chart and turn it over to the team," Bourke said. "This will exhibit participatory leadership on your part and get their feelings out in the open."

From this exercise, the project leader can begin to define the goals and roles for his team, taking a dual people/task-orientated approach, rather than the traditional task-oriented one, Bourke claimed.

To get an effective project team going, Bourke explained, the project leader should consciously work on being a good leader. This means instilling the members with a high-level of trust and genuine concern for them and their ideas. Communication, he continued, "must be open and authentic . . . make sure you understand them and they understand you.

"Make sure the objectives of the team are clearly defined for them," Bourke stated, and "don't expect there to be any conflicts."

The key to dealing with conflicts, he said, was simply to "be able to accept them and work through them."

After establishing the goals of the project team, Bourke urged team leaders to write up a formal charter. The charter is critical to define the authority of the team, Bourke said. It acts in conjunction with what he termed "bottom-up leadership," and also helps to "create a winning impact on upper management."

Expert Details How to Ease MRP Changes

CHICAGO — Unfreeze, move and refreeze was the advice from Dr. Duane Lakin, an industrial psychologist from Chicago, who spoke about changing the attitudes of "the critical mass" confronted by a materials requirement planning (MRP) system.

Following consultant Dick Bourke (see related story) during a session at the Information Management Exposition and Conference for Manufacturing (Info/Manufacturing) here, Lakin said that freezing can be accomplished with education and with a convincing argument of the need for change.

"This is much more difficult than it sounds," Lakin was quick to point out, because of the manifold impact of organizational change.

Issues that must be considered, Lakin stated, are the ways in which workers will be forced to "think about themselves." Change can mean loss of job, prestige, authority, power, predictability and standards. Change can also be interpreted to mean more responsibility, anxiety, increased accountability and new standards to replace the lost ones.

When change is introduced into the work environment, Lakin continued, all kinds of new people factors surface and must be addressed. Workers are resistant because they fear loss of identity, loss of territorial rights and impending conflicts, he said.

In order to allay these fears, Lakin advised project managers to build a strong system of managing by objectives, evaluation, reward and communication.

He also stressed the importance of top management's role in implementing change. He urged corporate higher-ups to demonstrate a corporate commitment to change, to de-

(Continued on Page 23)

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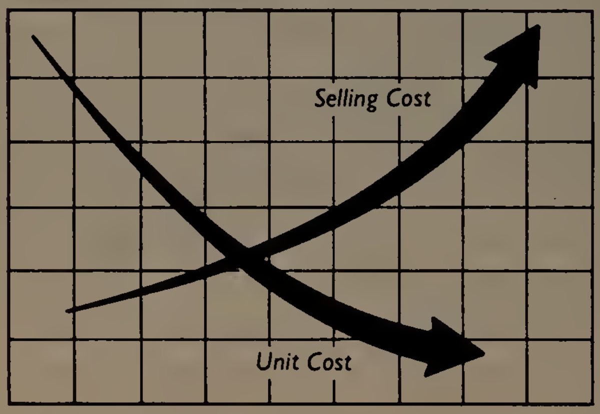

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Not Just Another MIS

DSS Seen Moving Ahead in Information Area

By Susan Blakeney
CW Staff

CHICAGO — "Decision support systems [DSS] and related technology are the fastest growth segment of information system technology," according to Gary K. Gulden, vice-president of Index Systems, Inc. in Cambridge, Mass.

Gulden made this statement in a session on "The Present and Future Importance of Decision Support Systems" at the Information Management Exposition and Conference for Manufacturing (Info/Manufacturing) held here recently.

He said that DSS was not just another version of the "MIS [management information systems] myth." In fact, he suggested that it may well be the median to dispel it.

"DSS systems do not supercede EDP or MIS systems," Gulden argued, "but rather are a new layer in the evolutionary process" of information systems.

In differentiating MIS systems from DSS systems, Gulden cited that with MIS the user is the recipient of large bodies of information, while with DSS the user is the driver and obtains specific data.

Also, the MIS system is usually "full-scale at birth," Gulden said, while DSS is a prototype at birth. He contended that MIS systems traditionally produced hard copy, were menu-driven and Cobol-oriented. DSS, on the other hand, utilized graphics tools and fourth-generation languages.

"People are succeeding with DSS" he continued, and advised his audience on how they could do the same.

Gulden's "Keys to Success With DSS" consisted of five main points. The first recommendation for would-be DSS users was to "pick the right targets.

"Find where it would be most important to the organization and provide it," he said. He urged people to look for the decision-making area that was relevant within the organization, had a high visability within the organization, offered good leverage and was of a manageable scale.

Next, Gulden said to "pick the right participants." He urged the DSS implementor to seek out the person who would develop into a "future missionary of DSS," so that after the DSS person left the area the project would continue to survive.

Thirdly, Gulden emphasized, "pick the right process." He explained the importance of involving people in the DSS area and that the DSS leader should "pace the growth of DSS to the user's growth."

Gulden also stated that a prototype should be used rather than specifications. People must be shown how DSS works, not merely told. He warned DSS people to "think through the likely evolutionary paths" in both structured and unstructured situations alike.

"Start simply and be careful with the magic."

Gulden's fourth rule was to "fit the tools to the task." This is when the DSS leader must evaluate high-productivity tools, take human factors into consideration and phase out the "chauffeur" or consultant involved in the project.

"Manage the DSS proliferation" was Gulden's fifth maxim. At this critical phase, DSS opportunities must be assessed and a strategy and future DSS plan must be developed.

"A management framework for DSS must be established," he continued, that would include showing where DSS applications are eligible, what their life cycle is, what documentation is needed and lastly, what kind of security system need be adopted.

In addition, Gulden urged the DSS person to evaluate the "efficiency vs. effectiveness" of the DSS system, only utilizing DSS where needed. Data standards and technology standards must be considered, he said.

Gulden reminded the audience to provide DSS education to all staff members involved in the project. He also stressed that the DSS manager should "manage the project — not control it.

"You can't control it," he concluded.

Pointers Offered For Handling Change

(Continued from Page 22)

fine relevant career opportunities, to do whatever they can to reduce distraction to change and to make themselves a model of an enthusiastic approach.

Lakin emphasized interpersonal skills over technical skills in choosing the right person for the job of project leader.

"It's easier to teach someone with people skills manufacturing than to teach someone with manufacturing knowledge people skills," he said.

Furthermore, he said that DP people are not always the best people to be project leaders.

Lakin accused them of practicing a " 'Name That Tune' style of management — I can fix that problem by such and such a date . . ."

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CW 51082

Florida Crime System to Blame?

Computer Mix-Up Puts Woman in Limbo

By Bruce Hoard
CW Staff

MIAMI — After a two-month odyssey that took her from the Orange County Jail to the Dade County Jail to the South Florida State Hospital, Anette Elaine Cammock of Orlando, Fla., was freed here April 2.

Cammock's bad trip began after a controversial search of the Florida Crime Information Center computer system.

The 28-year-old woman was arrested in Orlando by Orange County sheriff deputies Jan. 29, after she was found wandering the streets in what an eyewitness described as an intoxicated and mentally unstable state of mind. In her possession at the time was a portable liquor cabinet, a pink bathing cap, a Holy Bible and a dictionary.

ID Snafu

Cammock was jailed as Jo Ann Hammock — who was wanted for passing bad checks in Miami — after the Florida Crime Information Center computer linked her with that name. Five days later she was transferred to the Dade County Jail. She had not yet contacted her husband, who filed a missing persons report with the Orange County sheriff's office the day after her arrest.

Cammock's condition deteriorated dramatically after her arrival at the Dade jail, according to Dade County Officer Joyce Holmes. A psychiatric examination showed Cammock suffering from an acute schizophrenic episode.

On Feb. 24, Dade County Circuit Judge Herbert Klein signed an order sending her to the South Florida State Hospital. In the eyes of the law, she was still Jo Ann Hammock.

Cammock's mental health finally improved to the point where she was able to call her husband. On April 2, Klein determined she was not Hammock and released her to the custody of her family.

According to Bob Smallback, director of Criminal Justice Information Systems for the Florida Criminal Justice Information System, the system that identified her as Jo Ann Hammock utilizes three Burroughs Corp. B4800 computers in Tallahassee, Fla., to link 12 remote sites across the state.

All three processors share a common memory and are programmed to recall all names that are similar to any name entered and have birth dates within five years of the entered name.

Mentally Defective

Orange County sheriff's attorney Bill Vose, who is preparing for a possible lawsuit in the case, said he was on the scene at the time of Cammock's arrest. He talked to her and found her "mentally defective," "drunk" and "really screwed up," but able to speak plainly and identify herself as Janet Hammock, he explained.

Moreover, Vose maintained Cammock signed a release with the name Janet Hammock. When that name was entered into the system, the file on Jo Ann Hammock appeared and Cammock was on her way to two months in limbo.

Asked if Cammock had any identification on her at the time of the arrest, Vose replied, "I vaguely remember that she did have an I.D. on her, and I'm pretty sure it said 'Hammock.' "

Although in reading a list of articles found on Cammock Vose failed to mention a driver's license, he maintained that her driver's license was included on a "booking sheet."

"She's a black female, has the same last name and the same date of birth," Vose said of the Cammock-Hammock connection. "The fact that there's a little mix-up on the first name doesn't mean anything because it's easy to change that," he added.

Despite the fact that Cammock was found not to be Hammock by Klein, Vose remains unconvinced. "I think she's the person, to be real honest with you," Vose declared. "I think she's blowing smoke to make a lawsuit."

Cammock's attorney, Carl Masztal, said she could not have had her driver's license on her at the time of her arrest because he had it.

He maintained that the driver's license number referred to by Vose was taken off the warrant for Jo Ann Hammock, not from Cammock's driver's license.

Cammock Freed

According to Masztal, Cammock was freed by Klein because she produced a passport and driver's license — both with pictures — in addition to endorsements from two doctors at South Florida State Hospital who said she was indeed Cammock.

"I think Orange County is justifiably afraid that they're incompetent," the lawyer said of Vose's remarks.

As for a possible lawsuit, Masztal said the matter was out of his hands because he was no longer actively representing Cammock.

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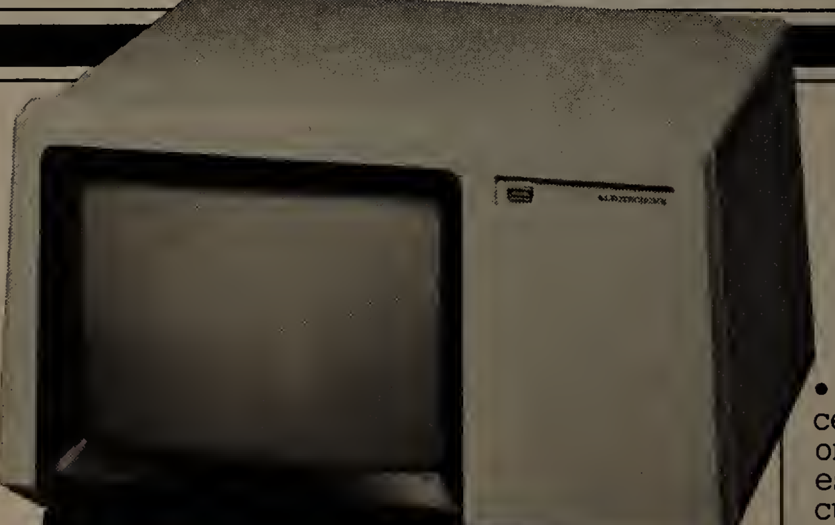

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Should Research be Censored for Security?

By Brad Schultz
CW New York Bureau

Analysis

The issue that now has the National Security Agency (NSA) and the intelligence community as a whole at loggerheads with the computer science research community is whether publication of scientific research should be censored in order to protect national security.

While the Data Encryption Standard controversy has cooled, the censorship issue was provoked by that controversy.

It was unwittingly provoked in 1977 by Jerome A. Meyer, then an NSA employee, who wrote a letter to a committee of the Institute of Electrical and Electronics Engineers' (IEEE) Information Theory Group warning that the committee would be subject to prosecution under the International Traffic in Arms Regulations (Itar) if it held a certain cryptology seminar.

Should foreign nationals from the Soviet bloc attend the seminar, which would be held in the U.S., speakers might — according to the language of Itar — "export" classified information by discussing developments in cryptology, Meyer maintained.

Meyer had a longstanding interest in surveillance of citizens. In 1971, an IEEE journal published a paper by Meyer proposing that habitual criminals be required to wear electronic transponders (resembling wristwatches) as a condition of release from prison.

A "computer radio system" would then be able to monitor the movement of such people, noting their locations when crimes are committed, the NSA engineer wrote.

Need for License

Upon investigation at the time, *Computerworld* learned the speakers — and any other American caring to discuss frontier research in cryptology — would, according to Itar, need a license from the State Department's Office of Munitions Control.

Spokesmen for that office said they would turn any such applications over to the Defense Department's Office of Strategic Trade and Disclosure. The Pentagon office, CW learned, would then pass the applications on to the NSA.

In short, anyone intending to demonstrate in terms of leading-edge cryptology that NSA could use coming technology to conduct secret surveillance of citizens would effectively need NSA permission before such a demonstration could be lawfully conducted.

The Meyer incident was soon connected with evidence that NSA also had influence on the National Science Foundation's awarding of grants for cryptological research.

The Oct. 10, 1980 *Science* magazine carried a letter from Adm. Bobby Inman stating: "NSA does not now have and does not intend to seek the authority to prohibit NSF funding in this area. We do hope, however, that NSA will become an increasingly important sponsor of research in this area."

Conference Set For ICL Users

UTICA, N.Y. — A conference for ICL, Inc.'s System 10 users will be held May 16-18 at the Sheraton Hotel here.

The conference, sponsored by ICL, Inc. and Forum International, will provide users with an update on System 10 features.

A tour of ICL's manufacturing facilities is included.

Registration fees are $25 for Forum members and $50 for nonmembers.

Fees should be sent to Forum International, 4300-L Lincoln Ave., Rolling Meadows, Ill. 60008.

Further information about the conference is available from ICL, 415 E. Airport Freeway, Irving, Texas 75062.

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Inman Leaving Security Role

NBS Seeks Comments on Security Standard

By Brad Schultz
CW New York Bureau

NEW YORK — Adm. Bobby Inman, former director of the National Security Agency (NSA), will retire from government intelligence work while the National Bureau of Standards (NBS) seeks public comment on a computer security standard that has had the NSA in hot water for years [CW, April 26].

NBS policy requires the Commerce Department agency to invite comment on a standard five years after adoption.

NBS adopted the Data Encryption Standard (DES) — also known as Federal Information Processing Standard (Fips) 46 — in 1977. DES is an algorithm — a procedure that may be implemented in hardware, software or firmware — for rendering data sent from one computer to another incomprehensible to unauthorized interceptors.

DES an 'Embarrassment'

Talk about DES has embarrassed NSA because people have asserted that the algorithm's development was heavily influenced by the Defense Department agency, although NBS officials have denied NSA involvement, claiming IBM did the work on its own.

IBM spokesmen have also said that NSA did not influence IBM's development of the algorithm, which is now implemented in a number of IBM products, including 3270 terminal options.

NBS can only set standards for use by civilian employees of the federal government, so commercial and military DP users are not legally required to employ DES. In fact, U.S. military regulations ban implementation of DES in military systems. However, DES has become a de facto commercial standard and is now extensively used by financial institutions, among other companies, that routinely transfer sensitive data among computers.

Controversial Years

Inman, who recently announced that he will quit the job of Deputy Director of the Central Intelligence Agency (CIA) and retire from the Navy, skippered NSA through years of internal disquiet on the subject of cryptology, the scientific study of encryption and code breaking.

According to informed sources, the disquiet within NSA stems from perceptions that NSA can no longer monopolize American expertise in cryptology.

During the past decade, a number of academic computer scientists appear to know more about cryptology than NSA does.

NSA reportedly worries that American experts outside the agency's sphere of influence could, by publicizing their research results, allow other countries to discover ways to crack the codes used to secure data critical to national security and also to discover ways of devising codes U.S. intelligence agencies would be unable to crack.

For decades, NSA has advised the U.S. military and intelligence communities on cryptology, among other functions. Those other functions are not clear because the public is not allowed to know the NSA charter, annual budget, personnel roster, inventory of equipment and virtually any other information detailing what the agency does and who it affects.

Surveillance Controversy

However, congressional investigators discovered that during the 1960s NSA clandestinely opened and read letters sent by thousands of people suspected of opposition to the Vietnam War.

Critics of DES and recent steps taken by the intelligence community to control cryptological research in academia and the private sector have often pointed to NSA's role in secret surveillance of U.S. citizens.

Analysis

DES criticism, which is likely to be expressed in responses to NBS' current call for public comment, has partly focused on whether an organization like NSA could build a computer powerful enough to identify the bit string used to encrypt data under DES.

In 1979, the U.S. Senate's Select Committee on Intelligence announced it found no evidence that DES was unsound or that it was developed under NSA influence, but details of the committee's investigation remain classified.

Breakthroughs in cryptology since the mid-1970s, especially in an area called public-key cryptography, are seen by a number of experts as allowing DES to be used in ways that can withstand the attacks envisioned in early DES criticism. But the agency Inman left less than a year ago, replacing ex-Centronics Data Computer Corp. executive Max C. Hugel in the CIA's number two job, continues to worry academics.

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At 12th Users Group Meeting

NCR Users Discuss Multivendor Environments

By Jeffry Beeler
CW West Coast Bureau

SAN DIEGO — Interest in tying together users of different vendors' equipment ran high when NCR Corp. recently marked the 12th anniversary of its annual international users group meeting.

In both formal and informal discussions, the topic of user and vendor conversation turned repeatedly to the growth of multivendor environments and to the resulting incompatibilities among departments under the same corporate roof.

Representing a wealth of industries and technological interests, more than 750 attendees partook of a varied educational program that reaffirmed the meeting's overall theme — "Understanding the Tools of the Future."

But although the breadth of the conference's subject material rivaled the diversity of the attendees' backgrounds, some topics of discussion clearly commanded more attention than others. One such dominant item of conversation was the concept of networking, especially the interconnection of mutually incompatible systems within a single organization.

Even the conference's product exhibit — only the second such showcase in the meeting's entire history — reflected the participants' networking interests.

In a realistic simulation of many of today's decentralized computing environments, the exhibit brought together selected offerings from more than 30 hardware and software suppliers. Each of the automated displays was driven by the same host, which formed part of an NCR product demonstration that sat literally and figuratively in the center of a local exhibition hall.

Vendor Incompatibility

Why was the accent on networking-related issues so pronounced? The reason is that in the world of big business, vendor incompatibility is becoming an increasingly serious concern.

"Already, the decentralization of many data processing functions is a fact of life in our industry," according to NCR Chairman William Anderson. "Yet to date, only a small minority of EDP users have made significant progress in tying together the diversity of their operations into integrated information networks."

Anderson purports to see little future in the "parochial" networking approaches that have traditionally dominated the information systems field. "As the number of communications users increases, the strategy of suppliers' protecting their customer base through unique design is no longer valid," he said at last week's users group meeting.

Genesys Meet Set May 19-21

SEATTLE, Wash. — A three-day conference for users of Genesys Software Systems, Inc.'s software packages will be held here, May 19-21 at the Park Hilton Hotel.

The conference will examine the capabilities of the Genesys Human Resource Management package and how to use the Genesys Payroll, Personnel and/or Benefits Management packages.

Sessions, workshops and seminars on the packages' different features are scheduled along with sessions on employer-sponsored Individual Retirement Accounts (IRA), alternatives to employer-sponsored IRA's and employee productivity.

Registration fees are $450/person for one or $400/person if three or more people from the same company attend.

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Hughes to Build Future With Personal Computers

CULVER CITY, Calif. — Personal computers will be to Hughes Aircraft Corp. in the 1980s what smaller mainframes and minicomputers were in the 1970s — a means to disperse computing power within the corporation.

And Hughes is not only doing all it can to place computing power at the user's fingertips, but it also helps employees purchase dedicated word processors and personal computers.

"The cost of these small computers is such that a department or even an individual can justify such a system in his budget," remarked James Woods, associate director of communications and data processing (C&DP).

"For many users, a personal computer is probably the most efficient and cost-effective way to solve certain problems," he noted. "From an organizational point of view, the problem is to channel the decision making in a direction most compatible with the other computers in the company."

For engineers who use personal computers for software development, C&DP offers a range of microcomputer cross assemblers, cross compilers and simulation hardware.

"Engineers can develop software faster by doing the initial programming on a convenient stand-alone personal computer, then transferring large portions of the task to large-scale computer installations," Woods explained.

A high-technology electronics and avionics manufacturer employing more than 59,000 people, Hughes has engineering and manufacturing operations in 11 Southern California and Arizona facilities, with marketing and field support offices spread internationally.

To support the company's industrial relations organizations, C&DP has just completed the first stages of implementing a distributed processing system consisting of five Hewlett-Packard Co. HP 3000 minicomputers for personnel reporting and analysis.

The system was designed to help the firm's human resources organizations keep pace with the explosion of data that must be gathered and stored on applicants, employees and former employees, according to Woods.

Centralized DP Activities

The largest portion of Hughes' DP activities is centralized in a single computer center in Fullerton, Calif., built around two Amdahl Corp. 470V/8 mainframe computers.

A third 470V/8 has been installed to serve as the core of a new Ground Systems Group (GSG) computing center.

The Amdahls have 32M bytes of main memory and 55G bytes of disk with more than 30 tape drives for auxiliary storage. The newest 470V/8, in addition to processing GSG engineering and business applications, will relieve the work load of the other two machines and service forecasted processing needs.

"As a companywide utility, C&DP is constantly trying to keep pace with burgeoning demands," Woods said. "A key strategy has been to make available software that does not require a specialized background in computers and programming."

For example, at least four different interactive, on-line systems are available on the Amdahl computers: IBM's TSO, VM/CMS, IMS and Hughes Text System (HTS).

Hughes' Amdahl 470 users also have available such engineering software packages as circuit analysis, computer-aided manufacturing, structural analysis, thermal analysis and simulation languages.

Business and engineering users must be able to access many different host computers to benefit from the full complement of software and support systems installed throughout Hughes, Woods noted.

That capability is provided by Hacnet, a companywide shared asynchronous data communications utility operated by C&DP.

Instead of separate networks Hacnet provides one common, uniform resource, Woods said.

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10 Try DMS/VS. Not so good. Needs CICS experts. Go back two (2).
11 New objective: Executive query and Reports on-line.
12 Friend recommends DMS/VS. Go back five (5).
13 Try command level. Go back to start.
14 New Objective: New applications up without bringing CICS down.
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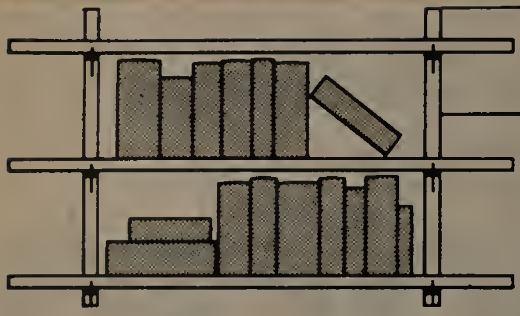


Off the Press

INSIDE CP/M: A Guide for Users and Programmers
By David E. Cortesi

If you're planning to work with small computers, a knowledge of CP/M could be valuable. This book consists of two parts: Part 1 explains managing, using and programming small computers in CP/M (8-bit machines), CP/M-86 and MP/M (16-bit machines). Part 2 is a complete reference guide to commands and information that answers most common questions and problems users and programmers encounter. This is a book for the serious computer user and a comprehensive handbook for the most popular operating system for small computers today.

Softcover, 571 pages, $22.95, ISBN 0-03-059558-4. Holt, Rinehart and Winston, 383 Madison Ave., New York, N.Y. 10017.

MRP II: Unlocking America's Productivity Potential
By Oliver Wight

MRP stands for manufacturing resource planning, and MRP II is a technique that goes beyond the standard, closed-loop system to include financial concepts and the ability to produce simulations. This book explains MRP and its potential for improving manufacturing productivity by better management of the human enterprise and through automating appropriate systems. In addition, it covers MRP II in productivity issues, purchasing, finance, engineering and data processing, to name a few. There are few books on this subject, and this one is comprehensive and thorough.

Hardcover, 555 pages, $25.00, ISBN 0-8436-0820-X. A joint publication of Oliver Wight, Ltd., P.O. Box 278, Williston, Vt. 05495, and CBI Publishing Co., 51 Sleeper St., Boston, Mass. 02210.

BITS 'N BYTES ABOUT COMPUTING: A Computer Literacy Primer
By Rachelle S. Heller and C. Dianne Martin

This book is intended to explain computers to in-service and elementary school teachers whose students, in all likelihood, know more about computers than they do. As such it serves a highly useful purpose. Furthermore, it presents many activities that do not require a computer. Each chapter provides a list of readings for both student and teacher. Numerous drawings, photos, illustrations, a glossary and index are included.

Hardcover, 174 pages, $17.95, ISBN 0-914894-26-9. Computer Science Press, 11 Taft Court, Rockville, Md. 20850.

(1) ARE YOUR LIGHTS ON? How to Figure Out What the Problem Really Is
By Donald C. Gause and Gerald M. Weinberg

Hardcover, $14.95, ISBN 0-87626-048-2; Softcover, $7.95, ISBN 0-31630-521-9; 157 pages. Little, Brown & Co., 34 Beacon St., Boston, Mass. 02106.

(2) THE PROACTIVE MANAGER
By Lorne C. Plunkett and Guy A. Hale

Hardcover, 221 pages, $23.95, ISBN 0-471-08509-X. John Wiley & Sons, 605 Third Ave., New York, N.Y. 10158.

(3) THE TECHNICAL CONNECTION: The Hows and Whys of Time Management for the Technical Manager
By T. Kenneth White

Focus Course Set for DP Pros

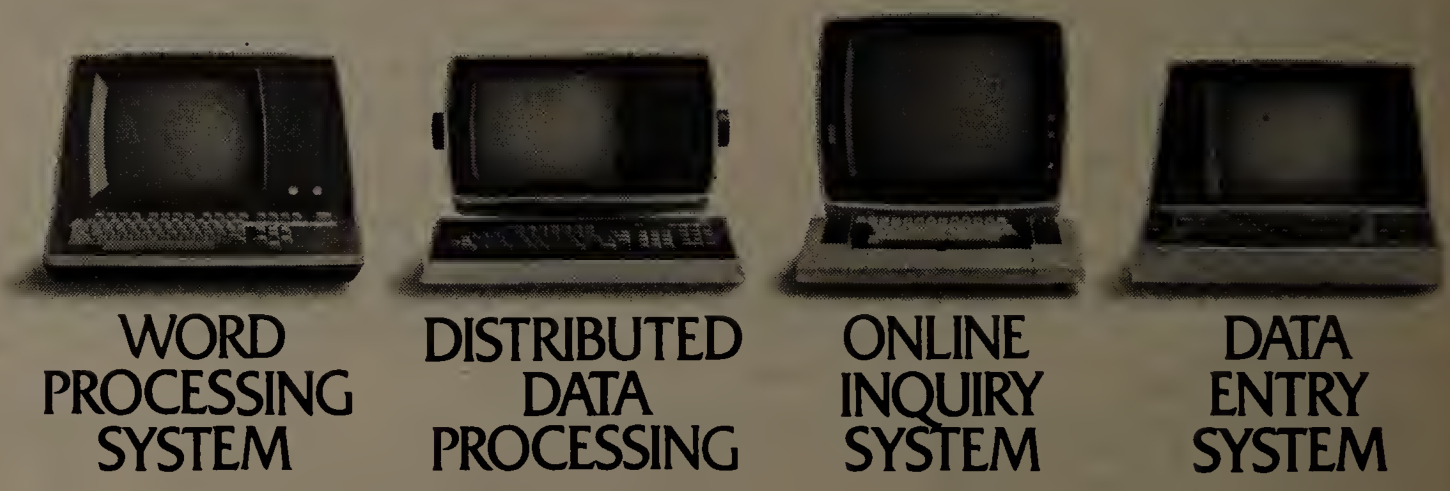
ENCINO, Calif. — Time-Sharing Applications and Consulting Services (Tacs) has announced a three-day, on-site training course titled "Focus Intensive for Computer Professionals."

The course is intended for experienced computer professionals, a company spokesman said. It will cover all aspects of the Focus fourth-generation language in the following sections: overview, data base concepts, Focus data base implementation, maintenance of Focus files, using non-Focus files, report preparation, decision support capabilities, creating customized environments and Focus application development methodology.

The course is limited to a maximum of 12 students.

The course is priced at $2,400 with additional fees to cover mailing of course materials and room and board for an instructor. There is also a $25 fee for a course notebook.

Tacs is located at Suite 8000, 15910 Ventura Blvd., Encino, Calif. 91436.



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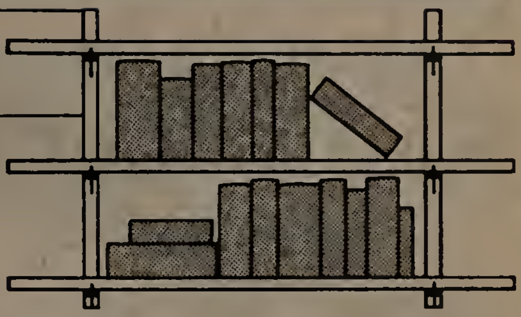


Hardcover, 203 pages, $24.95, ISBN 0-471-94034-8. Ronald Press/John Wiley & Sons, 605 Third Ave., New York, N.Y. 10158.

Here are three books that focus on managerial issues. *Are Your Lights On* is a highly entertaining book. Through a series of scenarios, humorously illustrated, it explores problem solving in real-world situations. The chapters are titled: "What Is The Problem?" "What is *The* Problem?" "What Is The Problem Really?" "Whose Problem Is It?" "Where Does It Come From?" and "Do We Really Want To Solve It?" An excerpt: ". . . One of the most important rules for the would-be problem-solver is this: IF YOU CAN'T THINK OF AT LEAST THREE THINGS THAT MIGHT BE WRONG WITH YOUR UNDERSTANDING OF THE PROBLEM, YOU DON'T UNDERSTAND THE PROBLEM."

The Proactive Manager blends two approaches — the creative and the rational — to problem solving, decision making and planning. Section 1 explores proactive skills: cause analysis, decision making, plan analysis and situation review. It is interesting to contrast cause analysis with looking to place blame. Plan analysis anticipates problems as well as opportunities. Section 2 covers people problems, attending meetings and persuasion and presentation skills. Section 3 covers helping others develop proactive skills. Numerous case studies drawn from the authors' experiences illustrate points. This book's objective is clearly to help you, as the dust jacket states, "increase personal effectiveness."

Next month "Off the Press" will be devoted entirely to books on office automation and word processing. Any publishers wishing to have their books considered for review should send copies to the Book Review Editor at once.

The Technical Connection promises the techically trained professional who has assumed managerial responsibilities that he can gain 30 minutes to three hours more productivity each day. Author White uses a formula called DOE to prove his point: delegate, organize and eliminate. Chapter topics include: "Eliminating Trivia Traps," "Overcoming Procrastination," "Relieving Executive Stress" and "Curbing the Socializing Syndrome." Many of the ideas and concepts herein will not be new, but the practical expression and implementation techniques make it above average in usefulness.

LOGICAL DATA BASE DESIGN

By Robert M. Curtice and Paul E. Jones

This long-awaited book by two staff members of Arthur D. Little explains the methodology they have been practicing since 1968. The premise is that the data problem must first be organized, then designed quickly and clearly. The book is a model of its premise; it makes its points succinctly and is well illustrated. It does not rehash the elementary, textbook approach to data base, but instead explains it as a means toward an end.

Hardcover, 227 pages, $29.95, ISBN 0-442-24501-7. Van Nostrand Reinhold Co., 135 W. 50th St., New York, N.Y. 10020.

THE FATE OF THE EARTH

By Jonathan Schell

Is it conceivable that by pressing the wrong button on a computer all of mankind could be obliterated? This is one of the concerns of this important new book, a collection of three essays dealing with the possibility of nuclear war. Schell feels limited warfare is well-nigh impossible and that the terror of a nuclear confrontation diminishes the quality and exhuberance of life. This book explores some thought-provoking issues for computer professionals and others.

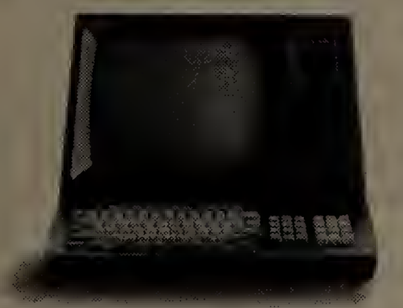
Hardcover, 244 pages, $11.95, ISBN 394-52559-0. Alfred A. Knopf, Publisher, 201 E. 50th St., New York, N.Y. 10022.

This monthly column describes a variety of recently published books of interest to Computerworld *readers. The books can be purchased or ordered at most bookstores;* CW *does not sell books.*

All inquiries for further information about the books should be directed to the publishers.

A Note to the Reader: Beginning this month we will include the International Standard Book Number (ISBN) with the book data. If you have had any problem identifying the book, its author or publisher, the ISBN number will reference them. The ISBN number appears on all books, and most libraries or book dealers with the bibliographic work Books in-Print *can help you.*

Publishers that wish to have their books considered for review can direct press releases, catalogs or other information to Features Editor, Computerworld, *P.O. Box 880, Framingham, Mass. 01701.* CW *cannot be responsible for unsolicited books.*



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Productivity Increased

Railroader's On-Line Switch Right on Track

By Tom Henkel
CW Staff

MONTREAL — When George Simon accepted a job as operations manager at the Canadian Pacific, Ltd. railway nearly five years ago, he knew it wouldn't be easy because he was taking charge of a rapidly changing computer operation.

Simon's job was to convert from a batch-oriented to an on-line system. The challenge was to make a smooth transition and to avoid firing unionized computer operators and other low-level operations employees. To accomplish that goal, some job classifications were eliminated.

The first part of the conversion is complete and employees have either been retrained or replaced with more technically skilled workers. The best part, Simon admits proudly, is that it was unnecessary to fire a single employee.

In total, some 30 unionized employees were trimmed from the operations staff, he said. About 15 employees were eliminated through regular attrition and most of the remaining workers were given jobs that make them a greater asset to the firm, Simon said.

"We pricked a balloon that was ready to go bang. The union ranks were slowly depleted and we converted the vacancies to the kinds of things that [computer] operations need — more technically trained people to help us do data base recoveries and all the kinds of things you have to do in an on-line IMS environment," Simon said.

Canadian Pacific is an IBM-compatible shop operating two 12M-byte Amdahl Corp. 470V/8 processors, one 12M-byte Amdahl 470V/7 at its Montreal facility and two 12M-byte Amdahl 470V/7C processors at a Toronto office. The firm is currently considering installing IBM 4300 series processors in its regional office. Up to to four 4300s may be installed, but the firm has yet to make a formal decision on the matter, Simon said.

George Simon

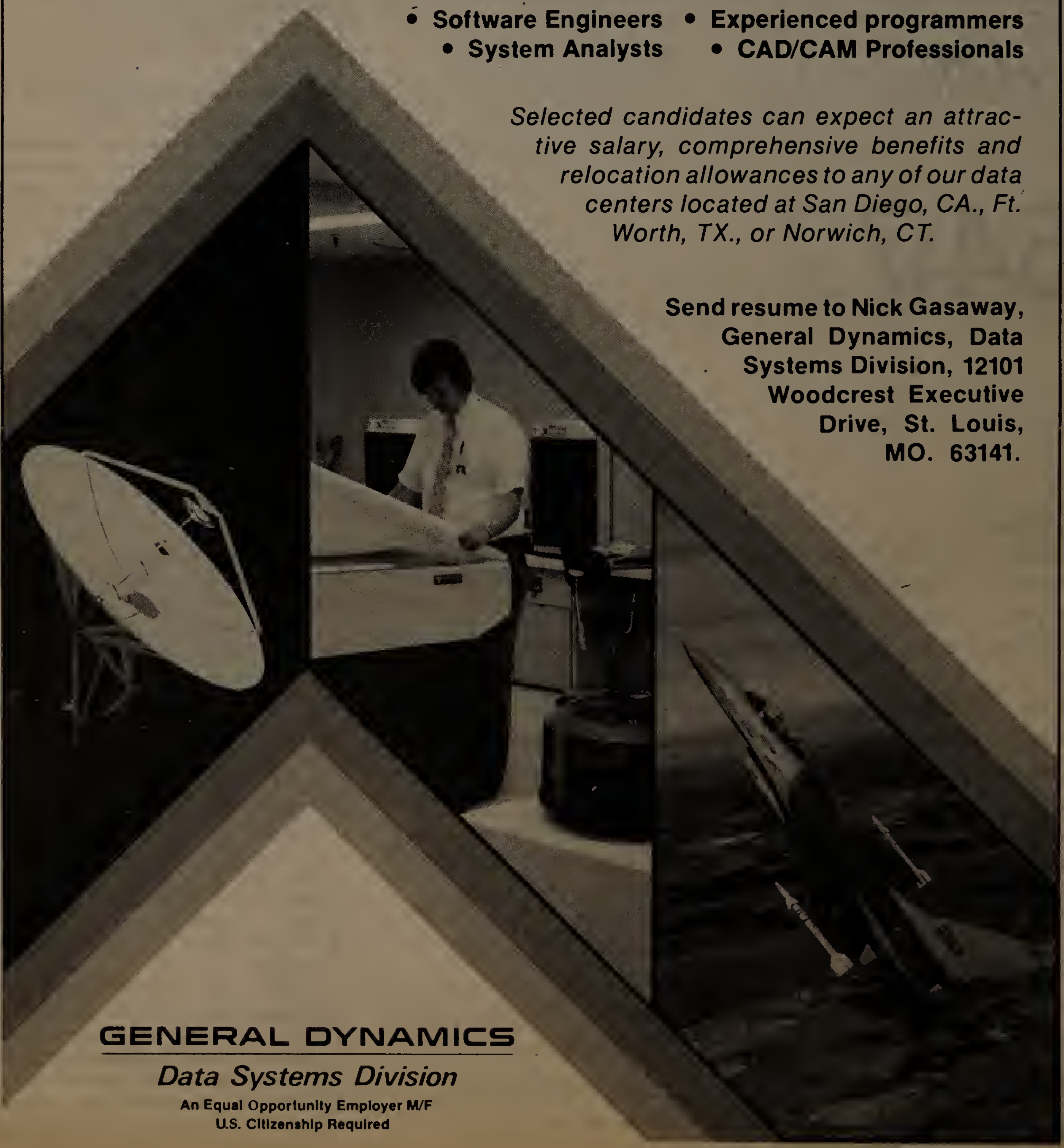
Creation of an on-line environment has prompted some major changes in the operations department. The total staff has been cut from 205 to 137 since 1973. About half of those cuts have been made since 1978 when Simon took command of the operation. There are 35 more technical employees than there were in 1973 and job classifications like console operators, input distribution personnel and card handlers have been eliminated.

With a variety of hardware and peripherals at several sites, coordination and communications become increasingly important. Five years ago, an operation that employed a higher number of tape handlers and operators worked. That type of environment is no longer feasible, Simon contended.

Even though elimination of relatively low-level job positions has just been completed, results are already evident, according to Simon. New employees are "interested in what they're doing. They're not going to sit for 25 years in the catacombs working on shifts, dropping parts, ripping paper or slapping a reel on a drive, which some of the people here did. What kind of creativity and efficiency do you get out of people like that? These people are more creative, they're more efficient, and as long as we keep them challenged — which isn't too hard a job — we find we get really good production out of them," Simon said.

Before Simon took control, many employees, including anyone who held a classification below that of master terminal operator, were union members. Some employees were satisfied with receiving relatively high wages for somewhat menial tasks, like handling tapes and sitting at consoles. By changing the operations department, workers have been placed in more creative positions where their contribution better benefits the organization. Those who were unwilling to be retrained for more technical jobs were eventually eliminated, Simon said.

While the operations department includes fewer employees than in 1973 and many of the unionized workers have been eliminated, Simon acknowledged that running the DP operation has become more expensive.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Tool Tracks CPUs, Devices in System Switch

MONTREAL — Switching from a centralized batch-oriented system to a distributed interactive system can cause problems.

Canadian Pacific, Ltd. railways, now making such a conversion, has implemented several programs designed to reduce potential problem areas, Operations Director George Simon said. (Story on Page 34).

One step towards avoiding confusion during system generation involved contracting with Amdahl Corp., supplier of Canadian Pacific's mainframe processors, to develop software designed to keep track of processors and peripherals that are components in the Canadian Pacific system. It is essential to know the status of all system devices during system initialization in order to avoid start-up delays, Simon explained. He added the Amdahl software, currently being installed, is expected to eliminate some of those problems.

A second program under development is a message-trapping system that will automatically track system messages, including OS and MVS messages as well as IPL messages, that are sometimes overlooked or not dealt with properly. The firm has instituted an electronic mail system, called Merlin, which allows employees to transfer mail, reports and other information to remote locations, according to Simon.

He felt that Canadian Pacific is already ahead of most companies in developing its electronic mail system. The recently installed system allows the firm to transfer corporate performance reports to various corporate and remote locations. In addition, directors of the company use IBM Personal Computers in their homes to link with IBM Series/1 processors at the Toronto and Montreal facilities to access all systems. DP support personnel also have portable terminals in their homes to provide services. "They don't have to come in the middle of a snowstorm to fix things up," Simon said.

"We want to provide the people with decision-making assists."

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Data Base Charges Up Hertz Credit Card Service

OKLAHOMA CITY, Okla. — "The name of the game in the rental car business is customer service," according to Les Burdick, director of corporate data center systems for Hertz Corp. here. And he decided that a data base environment at Hertz was necessary to maintain its commitment to customer service.

The data center that processes new credit applications, serves as the main credit collection facility and issues and controls seven million Hertz credit cards and rental transactions is in constant contact with the customer.

Hertz completed a major rewrite of its worldwide reservation system seven years ago. With this system stabilized, the data center system personnel began to turn their attention to the benefits of on-line inquiry and data base operations for their major applications, he said.

Development Targets

Specific targets for development included direct entry for Hertz credit card applications, providing immediate responses on customer billing questions and the ability to send customers facsimile copies of rental agreements to reduce handling of the large paper volumes, he said.

After a detailed system study, the data center staff determined that a data base environment was required if they were to meet their goals. "We decided on the [Cullinane Database Systems, Inc.] Integrated Database Management System [IDMS]," Burdick said. "We were writing code the same week it was installed."

Installed in May 1980, IDMS fit into the firm's IBM mainframe environment. The data center uses an IBM 4300 Model Group 1 with 4M bytes of main memory under OS/VS1 as its primary processor, with a 2M-byte IBM 370/148 for development backup. At present, approximately 150 IBM 3278 or equivalent terminals are online to the data base system.

The data center is responsible for 37 major applications systems, representing 2,000 to 3,000 batch programs. Written in Cobol, most of these applications will be rewritten around the IDMS over the next two or three years, Burdick said.

There are two active data bases in the Hertz data center. One is a rental agreement data base of two million to three million records, and the other is a smaller 60,000-item data base for processing new applications. Each night, between 30,000 and 40,000 completed rental agreements are added to the rental agreement data base in a batch update. The information is immediately available the next morning for inquiries and is simultaneously fed to the billing systems where receivables are continuously tracked.

Customers calling in for information on their accounts have their questions answered immediately, a spokesman said.

All cash payments received at the data center are also applied to the data base on a nightly basis. Once the payments are validated, the data is then passed on to the receivables system for posting.

As individual credit applications are received at the data center, they are manually logged in, and the basic information is entered into the computer.

On a nightly batch basis, the computer credit scores the applications and does one of several things: accepts it and issues a credit card, rejects it and issues a letter of denial or indicates that additional information is needed, a spokesman said. "Data accuracy has improved markedly, and maintenance is no longer a problem," Burdick explained. "But even more important, IDMS has proven to be a real productivity booster. It's so easy to use that we've been able to put more programmers on more projects — projects we wouldn't have gotten to for another year or so."

Hertz is in the process of creating its central data base, which will be known as the Customer Account Management System.

It will have as its nucleus the seven-million-plus Hertz credit cards that have been issued to date.

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Keeps Listings Accurate

System Answers DOE Directory-Assistance Calls

WASHINGTON, D.C. — A software directory system used by the Department of Energy's Office of Communications (DOE/OC) is answering directory-assistance phone calls and producing camera-ready listings for DOE's computerized directory system.

The combination of diverse information sources, turnover in personnel and a manual file system in the Office of Communications created problems for maintaining accuracy of directory information.

In 1979, officials in the Division of Telecommunications began examining alternatives for improving the directory service for OC at DOE, the spokesman said.

A system was needed with remote terminals to allow directory-assistance operators to retrieve current telephone numbers for headquarters personnel along with the capability to print the headquarters' organizational listings as well as the personnel listings in DOE's quarterly directory.

DOE officials purchased a software package called the Electronic Directory (Eldir). Developed by K&R Custom Software, Inc. of Newport News, Va., the package runs under Wang Laboratories, Inc.'s 2200MVP system.

The Wang 2200MVP was installed at the DOE facility in Germantown, Md., in May 1980. Modems and standard telephone circuits were used to connect the computers to Bell data speed terminals located at the Chesapeake and Potomac Telephone Co. building in downtown Washington D.C., according to the OC spokesman. DOE systems operators were trained by personnel from K&R Custom Software to run the Eldir programs. Since implementing the system, OC said it has been able to cut the number of operators from seven to five, he noted.

Directory Listings

Listings for the telephone directory are said to be produced from the same data base used for answering directory-assistance calls. This combined data base provides up-to-date information to both DOE personnel and those outside the department who use directory services.

The published telephone directory consists of several separate sections: alphabetical personnel listings reproduced from computerized printouts and organizational portions of the directory, which were typed from change notices supplied to the Division of Telecommunications, according to the OC spokesman.

Directory-assistance services were supplied under contract to the Chesapeake and Potomac Telephone Co. Operators used manually updated and typed listings to provide information to directory-assistance callers.

At Remote Terminals

At remote terminals, directory-assistance operators can enter simple queries for retrieval of information from the Wang 2200MVP, the spokesman said. Operators at the central computer site have complete control of all information stored in the data base and up to 50 separate directory files or sections of the directory can be established, he said.

File maintenance operations such as additions, deletions or change to directory information are entered at a central console. Functions such as printing file reports, terminal usage reports and the ability to make mass changes to the directory files are available, he explained.

A report-writer function is used to print the directory files in a variety of formats that provide camera-ready copy for publishing the telephone directory. Both organizational and personnel listings are printed on the computer printer, the spokesman said.

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Kentucky 'Avis' Puts Efficiency in Overdrive

FRANKFORT, Ky. — By the middle of this year, 120 county clerk offices in Kentucky will be tied into the state's Automated Motor Vehicle System (Avis) — no small feat considering that just a little more than a year ago only 19 counties were hooked into the network.

Avis now stores 2.5 million current vehicle records, including previous owner information and a history of the liens on those vehicles, according to George Fischer, state cabinet secretary for administration and finance.

The advantages that Avis provides the county court clerks are numerous. Paper-ridden boxes of registration files no longer spill over every inch of available counter space in these offices. Not only is Avis faster and more economical than the previous manual system, but the information is more accurate thanks to verification procedures built into the system.

A primary reason for automating the system was to provide better accountability for the collection of registration and license fees, which currently provide the state with about $48 million in annual revenues, according to Robert Neasham, commissioner of the Department of Information Systems, the state's new central computer agency.

The software was developed in-house with assistance from McDonnell Douglas Automation, Inc. The state hopes to realize a $5 million to $6 million annual cost benefit from the Avis system. This benefit accrues from standardizing the mathematical formulas used to compute fees, from reduced personnel needed to handle the administration of the operations and from quicker access to data, Neasham said.

The system will also help state troopers with their patrols. A police officer can now radio Avis with any Kentucky license number and learn all the facts about the vehicle's ownership before leaving the patrol car to speak to the driver of the vehicle in question.

State troopers can also find out the same information on cars registered in other states. Avis can make inquiries into the data bases of other vehicle registration systems in the other states.

When Kentucky's proposed vehicle title law goes into effect, Avis will be a keystone in making that law a success, freeing Kentucky from its reputation as an easy dumping ground for stolen cars, according to Major Bob Stallins of the state's DP office in Frankfort.

Statewide Use Difficult

Although the system is still in its infancy, a few problems have made statewide use of the system difficult. Time has been the major constraint: Placing the 600 pieces of hardware throughout the state and training local staff to use it in just 10 months has taxed the nerves and wits of the state's computer professionals, who sometimes worked 80-hour weeks to meet deadlines, one official reported.

Since the first week in January, assistance teams set up at the request of Gov. John Y. Brown have fanned out across the state to help any county having trouble operating the equipment. Other teams installed additional hardware to meet the peak load times for license and registration renewals that occur January through March.

The hardware used in the system is an IBM 370/168 multiprocessor located in Frankfort running IMS DB/DC. Local county clerk offices access the system through 3270 terminals and receive data through locally installed printers.

"The magnitude of such a system can be intimidating," Fischer reported. However, people linkages were an important component of the system. All county offices can dial a toll-free number 24-hours a day for assistance with the system's operation.

Although a few county clerks have expressed concern that the system overrides their authority, the 19 offices that used Avis in the initial phase of implementation found the system frees them to attend to other responsibilities.

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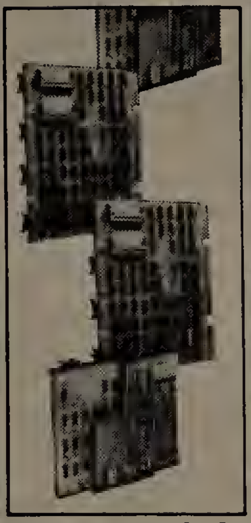
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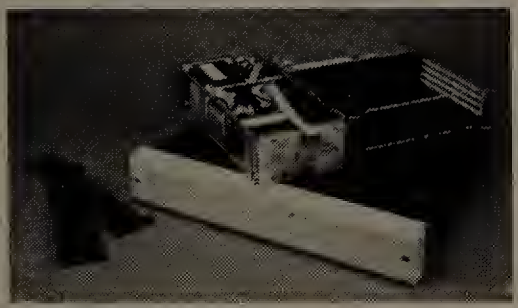
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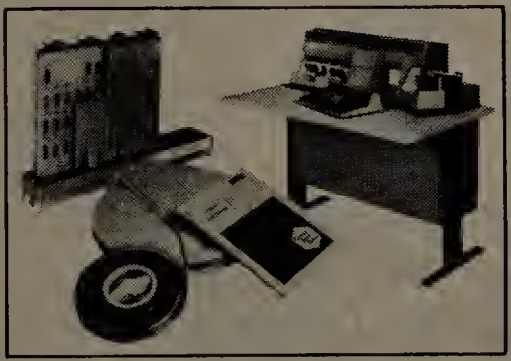
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RK05F-AA	19.2 MBIT DEC PACK DISC TO REPLACE RK03 120/60	$ 5600	50%	$ 2800
RM03-AA	SINGLE ACCESS 67 MBYTE 3600RPM CDC 9762 DISK, H9691, 120/60	20300	30%	14210
RLV11-AK	LSI/11 CTL + RL01 + RL01K-DC	6400	30%	4480
RL11-AK	UNIBUS CTL + RL01 + RL01K-0C	6400	30%	4480
TAPES				
TU58-VA	TU58-VX (DUAL DRIVE), TU58-VB (I/0 CABLES, MEOIA, DC PWR CABLE)	1500	50%	750
EXPANSION BOXES				
BA11-PE	6 SYSTEM EXPANDER BOX W H7420-A PS, NO CORE REG, 120Vac	4150	50%	2075
BA11-VA	H9281-BA, H7833-A, 120Vac (13.4"W, 3.6"H, 11.7"D)	700	50%	350
H334-E	H334-X W H7872-A POWER SUPPLY, 120Vac	1350	50%	675
CABINETS				
H9610-AC	11V03-L CAB 30" W/O POWER CNL	1350	50%	675
H9612-AC	11T03-L CAB 40" W/O POWER CNL	1690	50%	845
H9613-AC	40" CAB W/SOLID TOP W/O PC	1690	50%	845
MISCELLANEOUS				
FP11-EA	FLOATING POINT (23 + 9 OR 55 + 9) PROCESSOR, H7421-C, 120Vac	6400	70%	1920
KE11-E	EXPANDED INSTRUCTION SET (MULTIPLY, DIVIDE, SHIFTS), FOR 11/35, 11/40	1900	53%	900
KE11-F	FLOATING POINT INSTRUCTION SET FOR 11/35, 11/40	1900	53%	900
KT11-D	MEMORY MANAGEMENT FOR 11/35, 11/40	3350	55%	1500
KY11-LB	PROGRAMMERS CONSOLE	950	30%	665
REV11-A	EXT REFRESH + BOOT + TERM	340	50%	170
REV11-C	EXT REFRESH + BOOT 1	340	50%	170
VK8-AB	VIDEO & KEYBOARD CONTROL, 24 LINES 80 CHAR, 50Hz	1050	70%	315
COMMUNICATIONS				
DPM23-A	KDF11-AA, MSV11-DD, ISV11-B, BA11-NC, QJ642-AZ RSX-11S, QJ658-AZ, 120Vac	11500	30%	8050
DPM50-FA	INTELLIGENT I/0 SUBSYSTEM: KDF11-AA, H333-A, TEV11, MSV11-DD, ISV11-A, QJ642-DZ RSX-11S, QJ655-DZ, QJ658-DZ,120Vac	11450	30%	8015
DRV11-00	PARALLEL INTERFACE UNIT	300	15%	255
H326W	H326 EXCEPT NO COVER OR STRAIN RELEASE	275	50%	135
DRV11-J	64 LINE PARALLEL INTERFACE	450	20%	360
DLV11-F	EIA & 20mA ASYNCH SLU	370	30%	255
DH11-AA	16 ASYNC LINE MUX DIST PANEL & 120Vac PS PROG LINE SPEEDS	8800	50%	4400
ISB11-A	INDUSTRIAL SERIAL BUS CONTROL: KMC11-A, M8202-YE 56KBAUD, 1 WIRE DAISY CHAIN TO RT800 SERIES	8455	70%	2535
DPM50-HA	DPM50-FA EXCEPT QJ642-AZ, QJ655-AZ, QJ658-AZ, 120Vac	12640	30%	8845

PART NUMBER	DESCRIPTION	LIST PRICE	DISCOUNT	SALE PRICE
PRINTERS				
LA180-EA	LA180-PA + LAXX-NW EIA INTERFACE, 120/60	$ 4455	70%	$ 1335
LA36-CE	KEYBDARO DECWTR 120/60 20mA	2970	80%	550
LA36-CJ	KEYBOARD DECWTR 240/50 20mA	2970	80%	550
LA36-DE	LA36-DK W/20mA	1835	70%	550
LA36-0K	LA36 20mA W/O CABLE 120/60	2695	80%	535
LA36-DN	LA36-DJ W NO RIBBON, PAPER, CABLE, 240/50	2695	80%	535
LA36-HE	KEYBOARD OECWTR 120/60 EIA	3080	80%	615
LA35-CE	REC ONLY OECWTR 120/60 20mA	2475	80%	495
VIDEO TERMINALS				
VT55-FA	GRAPH TERM W/CDPY 120/60 20mA	5830	70%	1745
VT110-AA	OPM01-M + AVT100-AA, 120Vac USA LINE CORD	6325	50%	3160
VT62-AC	WITH EIA W CONT, 120 Vac	3350	85%	500
VT100-NB	VT100-AB W VT1XX-PN DECFORM KEYCAPS, 240Vac	2150	30%	1500
VT110-AB	OPM01-MS + VT100-AB, 240Vac USA LINE CDRD (50Hz)	6325	50%	3160
VT55-FB	VT52-BB W GRAPHING CAPABILITIES, 220/240Vac 50/60Hz	5830	70%	1745
MEMORIES				
MF11-UP	32KB CORE IN DOUBLE SYSTEM UNIT, RDOM FOR ADDITIONAL 32KB. UNIBUS INTERFACE	9600	84%	1500
MF11-WP	64KB CORE IN OOUBLE SYSTEM UNIT, RODM FOR ADDITIONAL 64KB. UNIBUS INTERFACE	10100	75%	2500
MK11-BE	128 KBYTE MDS MEM EXPANSIDN (2 MS11-KE)	17200	70%	4995
MM11-DP	16K 18 BIT 18 MIL PARITY MEM, ONE 1" BDARD	5750	70%	1725
MM11-UP	32KB CDRE, ADD-IN FOR WF11-UP	8600	86%	1200
MM11-WP	64KB CDRE, ADO-IN FOR MF11-WP	8500	76%	2000
MM8-AA	8K X 12 MEMORY, G649 + H219-A, 1.5 USEC	2875	74%	750
MM8-AB	16K X 12 MEMORY, G649 + H219-B, 1.5 USEC	3680	74%	950
MM8-EJ	8K X 12 BIT 18 MIL MEMORY, 1.5 USEC	2050	51%	1000
MRV11-AA	PROM/ROM MEMDRY UNIT	190	50%	95
MRV11-BA	PROM MEMORY UNIT	350	50%	175
MS11-JP	16K MOS MEMORY 11/04-34	3450	70%	995
MS8-CB	32K 32 BIT MOS RAM, 4K CHIPS (M8417-BA)	3850	66%	1300
MSV11-DC	16K BY 16 RAM	500	30%	350
MSV11-DD	32K BY 16 RAM	500	15%	425
MS11-FP	8K 18 BIT MOS RAM (M7847-AD)	1700	85%	250
MXV11-AC	32KB RAM, 2 ASYNC EIA SLU, SOCKET FDR 2-24 PIN 5V ROM (M8047-CA)	750	30%	525
MM11-YP	32K 18 BIT MEMORY, ONE 1" BOARD	6300	70%	1890
MS11-LB	128KB MOS MEMORY FOR 11/34A	2400	30%	1680
SPECIAL OPTIONS				
C011-A	CR04-E 1000 CPM TBLE TOP RDR (DDC M1000) + CD11 CDNT, 120/60	14890	45%	8250
C011-B	CR04-F 1000 CPM TBLE TDP RDR (DOC M1000) + CD11 CONT, 240/50	14890	45%	8250
CD11-EA	CR04-K 1200 CPM CONSDLE RDR (DDC RS1200) + CD11 CONT, 120/60	26800	56%	11700
CMS11-JC	CM11 CONT + OOC TM600 MARK/HDLE SENSE CR, 600 CPM, 120/60	11300	27%	8250
CTS11-JB	CARD TERM CONT, DECISION OATA 8010 RDR/PUNCH, ASCII, 8-BIT HOLLERITH	5800	57%	2500
LP11-VN	LP05-VN & LP11 CONT 240/50	16500	52%	8000
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RP04-H	UNIT SELECT SWITCH KIT	1000	70%	300

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Managers on the Move

CHARLES A. HEINS has been named assistant director for administrative systems development for the University Computer Center at the University of Pittsburgh, where he will plan for and implement the computer systems required to support the administration of the institution.

He has served in various computer and systems management positions with General Electric Co., Westinghouse Corp., Eastern Airlines, and most recently at USAir, where he was manager of systems development for corporate information systems.

Heins received his B.S. degree from Syracuse University and his M.S. from Florida International University.

•••

JOE W. MCKISSICK has been appointed manager of information systems for Connors Steel Co. with responsibilities for data processing at both the company's Birmingham, Ala., and Huntington, W. Va., plants as well as all corporate systems activities.

He previously was employed with Twin County Grocers, where he was director of management information systems (MIS). He also worked as MIS vice-president for Hudson-Thompson.

•••

JOHN P. KALLELIS was recently appointed vice-president of management information services at the corporate headquarters of ARA Services, Inc., located in Philadelphia, Pa.

Before his recent appointment, Kallelis was the director of management sciences at ARA. Previous to that, he was the vice-president of operations for Sigma Marketing, a former division of ARA. Prior to joining ARA Services, Kallelis was a manager in the New York Consulting Division of Arthur Andersen and Co.

•••

PETER D. THACHER has joined Davidson and Jones Corp. (D&J), general contractors, based in Raleigh, N.C., as director of information services.

Peter D. Thacher

Before joining D&J, Thacher was manager of information systems at Hunter Douglas, Inc.

He has a B.A. and an MBA from Tulane University.

•••

GEORGE T. STACK has been named director of business development and strategic planning for ITT Programming, based in Stratford, Conn.

Prior to joining ITT, he was a group staff manager with IBM in White Plains, N.Y., where he had worldwide responsibility for the definition and evaluation of software product requirements for large IBM processors.

Stack graduated from Manhattan College with a B.S. in physics and received an MBA in operations research from Columbia University.

•••

MICHAEL J. MATONE has been promoted to manager of systems and programming at Ketchum Communications, Inc. of Pittsburgh, Pa.

Michael J. Matone

Matone joined the agency as a systems analyst. He previously was a systems analyst for Sperry Univac and an applications programmer for the South Hills Computer Center and the University of Pittsburgh.

Matone holds a B.A. degree in philosophy and computer science from the University of Pittsburgh.

•••

JOSEPH A. MATTEIS, formerly director of computer operations for Ames Department Stores, Inc. in Rocky Hill, Conn., has been promoted to assistant vice-president. In this capacity, Matteis will assist in the overall executive administration of the Ames Information Assistance Division.

Prior to joining the company, Matteis was assistant vice-president of group data processing for Barclays Bank International in New York.

•••

EDWARD L. BEDDOW JR. has been appointed manager of computer audits at Philip Morris, Inc., based in New York.

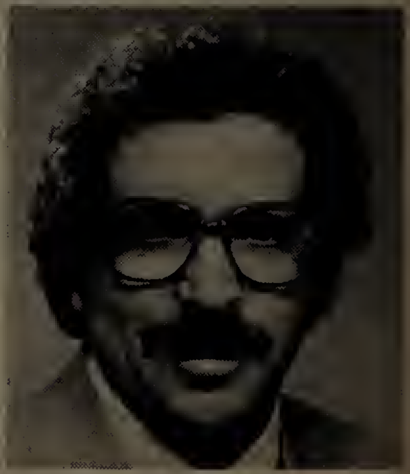
He previously was a senior management controls analyst for ITT in New York City. Prior to that he was associated with the Union Carbide Corp. and with the New York Life Insurance Co.

Edward L. Beddow

Beddow graduated from St. John's University with a B.A. degree in mathematics and received an MBA degree in accounting from the same institution. He is a frequent speaker on various electronic data processing auditing topics before such groups as the EDP Auditors Association.

•••

DAVID N. KARCHEM has joined Security Pacific National Bank of Los Angeles as a vice-president in the strategic planning section of the Automated Data Processing Department.


David N. Karchem

Before joining Security Pacific, Karchem was president of Computer Information Systems and director of ECPI Computer Services.

He is a member of the Association for Systems Management.

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Directory System Speeds Medical Center's Calls

AURORA, Colo. — Because critical medical functions require accurate and rapid responses to information calls, a medical center here installed a computerized system to automate its directory assistance and telephone directory printing services.

The Fitzsimons Army Medical Center has a large hospital and other medical support organizations staffed by both civilian and service personnel. Telephone services are essential for the medical staff and the U.S. Army Communications Command (Usacc) is actively improving the telephone equipment and services, Philip Schaller, director of Usacc, explained.

An upgrade to the telephone equipment is one of Schaller's current projects. Western Electric Corp. is providing circuits and other equipment, which will allow new calling features to be used on each telephone handset. The system upgrade also involves a new computerized system called the Electronic Directory (Eldir), which is designed to automate the directory assistance and telephone directory printing functions.

Eldir System

The Eldir system is a combination of hardware and software that has been developed by K&R Custom Software, Inc. in Newport News, Va. Eldir programs were designed to run on Wang Laboratories, Inc. equipment. The combination hardware/software system was supplied under subcontract to Western Electric. It includes interactive display terminals, a typewriter-quality printer and disk data storage units that are said to be tied to a computer located in the Usacc facility. The same building houses the directory assistance operator switchboards, which are staffed 24 hours daily.

According to Schaller, the Eldir system is intended to provide the needed quick responses to information calls through the interactive terminals. A directory assistance operator can type a few characters on the keyboard and the desired information is immediately retrieved from the disk data base and displayed on the terminal screen. These terminal queries can display information from both simple personnel listings and complex organizational listings.

The same data base can be used to print the telephone directory, Schaller explained. The printer is used to format the directory information into camera-ready copy for reproduction. Information is entered into the system once and is then available for either directory service.

The Eldir system was installed at Fitzsimons during a one-week period, he recalled. The initial directory data base had been previously converted to the Eldir format from a magnetic tape supplied to K&R.

By the end of the first day, the operators could begin using actual information entries familiar to them. Personnel from K&R trained both the directory assistance terminal operators and the operators who enter information into the computer. Practice sessions covered all aspects of Eldir operation and training for each function was completed by the end of the week.

Corrections, deletions and changes to the Eldir directory information are made using a file maintenance function, Schaller explained. The directory assistance terminals are controlled by a query mode and formatted printouts are handled by a directory print function that has many report writer features. Other file maintenance operations such as sorting and global changes are performed using utility functions.

Even during the transition period to automated directory services, Schaller said, Usacc is looking ahead to future improvements to the system. One possibility he described is a patient inquiry terminal located in the hospital. Current patient information could then be stored on the Usacc computer and displayed on the hospital's terminal to provide quick answers to the many calls about patients.

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UFW Uses DBMS to Handle Business Growth

KEENE, Calif. — Located in the Tehachapi mountains 120 miles northeast of Los Angeles is the national headquarters of the United Farm Workers of America (UFW), a 20-year-old association that recently decided to automate with a data base management system.

Founded in 1952, its beginnings were slow, but today the UFW is a national organization, handling contract negotiations and providing medical, life, disability, legal and pension benefits for more than 100,000 agricultural workers.

"We are no longer fighting for our lives," said Chris Heartmeyer, UFW business manager. "We are now consolidating, growing and expanding. Our operation today can be compared to a mid-size business, with earnings of between $25 million to $50 million a year."

Growth and Controls

It was growth and better controls that caused the UFW in 1976 to look toward data processing. "We needed a better way to service our membership," Heartmeyer said, "as well as keep track of our finances and information for contract negotiations. Automating appeared to be the answer."

According to Data Processing Manager John Clark, the UFW has some unusual considerations about its membership. With a work force that was mostly volunteer and unskilled, the computer system had to be easy to use.

The UFW decided on an NCR Corp. 8250 that was installed in 1977, running NCR's general ledger and accounts payable. In addition, it contracted for specialized applications, including budget/financial control and a voluntary reimbursement system.

By 1979, the 8250 was overloaded. The UFW decided to purchase an NCR 8555 using Century Analysis, Inc.'s (CAI) Ibos/5 translator to convert the I-series software to run under the new Virtual Resource Executive operating system, according to Clark. Knowing that its requirements would also include an on-line environment, the UFW also purchased a CAI Boss/3 teleprocessing monitor and Plus/4 data base management system, Clark said.

The UFW is now in the process of expanding the DP network to include UFW offices in other parts of the state and two clinics in Mexico, Clark said. In addition, a CAI Word/5 word processing system has been installed to handle office functions and the composition of contracts, which are lengthy documents of between 50 and 100 pages and can contain 200 clauses.

Currently, the UFW's configuration includes a 1M-byte NCR 8555 multiprocessor with four NCR 658 disks, an NCR 646 printer, an NCR 6340 tape drive and 10 NCR terminals. These operate nine hours a day, five and a half days a week, Clark said.

Auerbach Offers Reference Series To Manufacturers

PENNSAUKEN, N.J. — A reference series called *Computer in Manufacturing* was released here by Auerbach Publishers, Inc. recently.

The text was developed to aid manufacturing organizations make better use of manufacturing resource planning and control systems.

The first volume in the series addresses the components of manufacturing resource planning; Volumes 2, 3 and 4 focus on specific elements — master production scheduling, material requirement planning and execution and control systems, respectively.

The reference set is priced at $267, and volumes are available separately, an Auerbach spokesman said from 6560 N. Park Drive, Pennsauken, N.J. 08109.

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Larry Long's List of Professional Societies

Larry Long is compiling a list of professional DP/computer societies and organizations. To be included, societies and organizations should send a brief description of their purposes and objectives to Larry Long, Editorial Department, Computerworld, *P.O. Box 880, Framingham, Mass. 01701.*

• MIMS IN-HOUSE LICENSEE ACTION GROUP EFFORT (MILAGE INTERNATIONAL)

Purpose and Objectives: Milage International is a nonprofit association of users of the Mitrol Industrial Management System (Mims) software product.

Milage International was founded in October 1980 as a forum for the exchange of information, ideas and solutions about Mims software applications and to communicate to General Electric Information Services Co. technical and service needs of users. Membership is open to companies developing applications in Mims either on an in-house computer or on time-sharing.

There are two conferences a year; one in North America and one in Europe. The Milage magazine is published semiannually.

For More Information: Jon R. Franklin, Secretary, Milage International, R.J. Reynolds Tobacco Co., 401 N. Main St., Winston-Salem, N.C. 27102.

• THE SOCIETY FOR TECHNICAL COMMUNICATION (STC)

Purpose and Objectives: Founded in 1953, STC is a professional organization dedicated to the advancement of the theory and practice of technical communications in all media. As the world's largest professional society devoted to technical communications, STC is concerned primarily with the education, improvement and advancement of its members.

STC is actively engaged in encouraging research, developing programs for self-improvement, programs for in-plant training and granting scholarships. The society publishes a quarterly journal and newsletter, conducts an annual international technical communication conference, conducts seminars and publishes chapter newsletters.

For More Information: Society for Technical Communication, 815 15th St. N.W., Washington, D.C. 20005.

• STEEL INDUSTRY SYSTEMS ASSOCIATION (SISA)

Purpose and Objectives: To share information in the steel industry regarding the latest developments, technology and installations within the various member companies. Two-day meetings are held three times per year at various locations in the U.S. and Canada. Meetings include formal presentations and open discussion on topics of mutual concern.

Currently, there are 66 individual members representing 42 steel companies.

Sisa is an affiliated section of the Association for Systems Management. Membership is available to individuals employed by a steel company whose principal business is basic steel production specifically involving the use of melting and rolling facilities.

For More Information: T.C. Jeffers, Manager, Corporate Marketing and Manufacturing Systems, Kaiser Steel Corp., P.O. Box 217, Fontana, Calif. 92335.

• WOMEN IN INFORMATION PROCESSING (WIP)

Purpose and Objectives: WIP is an international organization of women in computer, word processing and related disciplines. The purpose of the organization is to advance the information processing industry by helping women benefit from opportunities created by automation — whether they work within the industry or work for end users — and by attracting additional qualified women to the industry.

One of WIP's main emphases is to help women build professional contacts more quickly by arranging ways to introduce women in the industry systematically through four complimentary and constantly expanding spheres of influence: networks, seminar gatherings, affiliated groups and *Parity* magazine.

The WIP speakers bureau coordinates cooperative efforts with other groups, both inside and outside the industry, allowing regular and highly visible opportunities for forum members to speak, help arrange product demonstrations and exhibits and otherwise expand their spheres of contacts.

Membership is available without regard to race or sex.

For More Information: Janice Miller, WIP National Headquarters, Suite 9, 1000 Connecticut Ave. N.W., Washington, D.C. 20036.

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During COMPUTERWEEK, a national conference presented by the publishers of *Computerworld, Computer Business News* and *Infoworld,* DELTAK videotaped a broad range of sessions by industry experts sharing their insights into business personal computing. These sessions are now available as a Conference Journal, *Personal Computing: A Business Perspective,* exclusively from DELTAK, the world's leading producer of video-based DP and management training programs:

Turnaround Time

By Larry E. Long

How Can Work Pace Be Accelerated?

Q Three years ago I left a job as a programming manager in a small company for a job as a project leader in a large company. My performance reviews have been excellent and I'm happy with my raises.

I cooperate with several other project leaders and management to schedule projects. The problem is that the project deadlines are so conservative they encourage people to work slowly. The lackadaisical effort put forth by almost everybody (including myself) results in frequent schedule slippages, but nobody seems to care.

Before changing jobs I used to enjoy coming to work. I don't anymore. The work here could be very exciting, but this slow-motion pace has become a way of life. I'm contemplating a change of careers, but realistically I can't afford it.

Do you have any suggestions that might improve the situation here?

A I worked my way through college as a switchman on the railroad. Foremen knew exactly how much work was expected. We would slow to a snail's pace if it appeared we might switch a few extra cars. There was certainly no effort made to set a new performance standard. This type of attitude has invaded your organization.

You know that hard work and a job well done results in a healthy and more enjoyable work experience. But sometimes people have to be shown that this is the case.

By setting an example, you can be the catalyst in the reversal of this attitude. Talk to your manager and express a willingness to quicken the pace. Try inviting challenging assignments. Don't overcommit beyond the capabilities of your people, but establish group and individual objectives that encourage greater productivity.

Expect some resistance for the first few months. However, the vast majority of the people in this business enjoy a challenge. Provide the opportunity to meet challenges and for people to see and experience the well-earned satisfaction of meeting these challenges.

I hope this experiment will give you and your colleagues a different perspective on your jobs. If it doesn't, then change employers — not your career.

Q I'm a third-year programmer and have never written an interactive program. We submitted our programs using punched cards on a remote job entry unit in college. I graduated from an 80-col card to a 96-col card. I would be interested in your comments on universities and companies still using punched cards.

A The continued use of punched cards for data entry, data storage or programming can be compared to burning money.

The loss in productivity, the expense of the media, their cumbersome nature and many other factors serve only to defy explanation as to why they are still in use.

Punched cards, however, are not totally without merit. They're great for notes and book markers.

Q After almost two years of working as a postdoctoral fellow in theoretical physics/chemistry, I'm finding it difficult to support my growing family by doing only research. With over five years of experience in computer programming (Fortran, Pascal, Basic) and good analytical skills, I thought it should be rather easy to find some part-time programming projects. However, all the advertisements are for full-time jobs.

I don't want to quit my research, but I'm afraid that soon I will have no choice. How do I find part-time programming projects?

A Some of the companies advertising full-time positions are probably several programmers short of authorized strength and have been for some time.

Although they would prefer that these slots be filled with full-time personnel, some managers are adopting the strategy that part-time assistance is better than no assistance. Call a few companies that have listed openings and express an interest in part-time work.

You might also try contacting companies that specialize in contract programming. During peak periods, they quite often supplement their work force with part-time programmers.

Long is a professor at Lehigh University, a DP consultant and author. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, *P.O. Box 880, Framingham, Mass. 01701.*

Who is buying personal computers? How will they affect your business? What benefits can you expect, and what problems? Who are the vendors? What should you look for in a modern micro? What about programming languages, networking, shared data bases? How is IBM's entry into the market affecting prices and competition?

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Computerized Pens Fuel Jet Design Efficiency

BURBANK, Calif. — Engineers at Weber Aircraft here have traded in pencils and paper for electronic pens and computer terminals to design and modify interior equipment for some of the world's major airlines.

Using an electronic light pen wired to an IBM computer terminal and a software package from Lockheed Corp. called Computergraphics Augmented Design and Manufacturing (Cadam), Weber has been able to reduce design time for airplane galleys, seats, lavoratories, stairs, doors, serving carts and various other interior airline equipment.

The photosensitive light pen is a wand-like device that activates the Cadam software right through the screen of the IBM 3251 terminals. Printouts of layouts, designs and proposals can now be produced by the engineers in minutes, a company spokesman said.

In addition, text, hardware, complete views or similar standard data can be transfered from one Cadam drawing to another by initiating a few keyboard functions at the terminal, according to Weber's vice-president of engineering, John Turner.

"We started using this system in January 1980 with two terminals. A year later we had 16 . . . we love them," Turner said.

Turner claimed the light pen coupled with the Cadam program, running on Weber's IBM System/370 Model 148 computer system, serves Weber's purposes better than anything else the company benchmark tested back in 1980.

Turner also said engineers find the extreme accuracy of the system very useful in checking details with overlays, noting that changes are easily and neatly made where needed.

Specialists in Weber's stress-testing group especially like a Cadam feature called finite element modeling. With this feature, they can determine how well galley, lavoratory and set structures withstand the wear and tear of everyday flight use, he said.

Turner feels that continued computer use in areas such as finite element modeling and structural analysis will enable Weber to provide its customers with products that are weight-, strength- and cost-efficient. All of Weber's 1,800 drawings have been system-generated since 1980.

"There is virtually no limit to the number of drawings that can be stored electronically for instant recall whenever redesign or modifications are needed," according to R. V. Greenshields, DP director at Weber.

Even after the drawings are retrieved and modified, the original remains intact and can be used again and again. Once a finished design is achieved, the drawing is printed out and ready for use in production.

Right now Weber uses the light pen for all of its two-dimensional drawings, and the company is making plans to install a three-dimensional system in the near future.

OCLC Joins RLG In Development Of Protocol

DUBLIN, Ohio — The Council on Library Resources, Inc. (CLR) and the Online Computer Library Center (OCLC) have announced that OCLC has joined the Research Libraries Group (RLG), the Library of Congress and the Washington Library Network (WLN) in the design of a telecommunications protocol that may be used to link a variety of bibliographic networks.

The Library of Congress, RLG and WLN have announced their intent to use the protocol to link their computer systems. OCLC has not agreed to such a linkage because the economic benefits to its members have not been clearly defined.

Development of the protocol and subsequent linkage is part of a linked systems project funded by CLR and involving the Library of Congress, RLG and WLN. OCLC's participation in the standard development will be at its own expense.

OCLC is at 6565 Frantz Road, Dublin, Ohio 43017.

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System Puts Credit Operations Of Furniture Store in Easy Chair

HOUSTON — An automated authorization system is helping Finger Furniture Co. here cut the cost of credit operations and speed up credit authorization for 180,000 accounts.

Finger Furniture, founded in 1932, formerly used a manual microfiche system to keep track of credit records. Employees often required up to 30 minutes to find the records necessary for credit authorization, a spokesman said. Since the main store covers 14 acres and can draw as many as 5,000 customers in a day, the microfiche system proved inadequate, he said.

Therefore, in 1979, company officials and credit executives decided to put the credit department for retail purchases on-line. Finger Furniture handles both retail and office furniture sales, the spokesman said. Credit sales for office furniture are handled on a separate system, he noted.

"The credit executives wanted to upgrade the system," said Ed Harness, director of credit for Finger Furniture. The firm was having some difficulty in finding enough people to keep pace with its growth, he added.

Company officials decided on an IBM 4331 system. "We looked at various companies," Harness said. "We were impressed by their [IBM's] product."

The system went on-line in May 1980 at the main branch of Finger Furniture in Houston and it now handles the entire credit system for all six Finger stores. "We'll soon be celebrating our second anniversary," Harness said. "It has been a delight," he said, referring to the system.

Main Feature

A purchase/payment/credit status record for each credit account is one of the main features of the system, Harness said. When a credit purchase is made, personnel enter the customer's account number into the system along with the amount of the purchase and down payment amount.

The system checks the customer's credit limit, outstanding balances and current delinquencies. If the purchase does not exceed the customer's credit limit, the purchase is approved. When the purchase amount exceeds established credit limits the system can review additional customer information to approve the purchase and establish a higher credit limit if the customer's credit record warrants it. If the system cannot make the decision the information is passed on to someone in the credit department for review.

Access to data base information is protected by the system assigning an individual user entry code that is changed daily. System users must also be authorized by the director of credit.

Because of the system's efficiency, the store has been able to reduce the number of people working in its credit department, Harness said.

The credit department is now in the process of going on-line with a collection system that will be integrated with the credit system, Harness said, adding that the collection system should be on-line by July.

APMS '82 Set For Aug. 24 in Bordeaux

BORDEAUX, France — The first international conference on Advances in Production Management Systems (APMS '82) will be held here Aug. 24-27.

The conference will include a discussion of the state of the art in production management as well as a roundtable session on industrial applications. Topics include "General Concepts in Production Management: How to Integrate Production Control Systems in a Firm" and "Real-Time Production Monitoring and Control." The registration fee is $240 before June 1 and $300 thereafter. More information is available from Grai, University of Bordeaux 1, 33405 Talence Cedex, France.

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Tracking Stock Inventory Saving $2 Million Yearly

By Bob Johnson
CW New York Bureau

NEW YORK — Tracking stock inventory may not seem to be a firm's most important computer application, but the Equitable Life Assurance Co. here feels it's noteworthy when such a system saves $2 million every year for what it claims is the third largest insurance firm in the country.

The system is Equitable's Supply Inventory Management System (Sims) and, according to Lou Polce who manages the project, Sims is one of a kind in the insurance industry.

Sims allows Equitable's seven regional stock service centers to link together in a network designed to provide on-line service to the firm's field offices across the country, Polce explained. All inventory items — from policy and claims forms to marketing tools, pens and pencils — are controlled by Sims through a dedicated Wang Laboratories, Inc. VS/80 CPU located in the company's N.Y. headquarters.

Requesting Supplies

Supplies are stored in four warehouses connected via dedicated lines to the seven regional centers in N.Y., California, Colorado, Iowa, North Carolina, Connecticut and Ohio. When supplies are requested from a field office, the regional center enters a request into a Wang remote terminal and the request is then relayed to one of the stock warehouses. Before Sims was installed, all supply requisitions had to go through the N.Y. center and often required a processing time of several weeks. "The old method of getting supplies was very cumbersome," Polce said.

The Sims system now permits orders to be entered at any of the regional centers, and if necessary, at any other warehouse in the network, Polce said. "If the regional center's nearest warehouse doesn't have a requested item the system allows for contact with another warehouse. A pick list is called up, the goods are selected and then they are shipped. The system manages the entire operation now and keeps records for reference. Sims allows us total flexibility," he said. Sims has already proven its worth by cutting inventory costs from $8 million to $6 million last year.

Polce pointed out that Sims is live 12 hours a day to allow coverage for all of the time zones in Equitable's network. Within the N.Y. office, CRTs monitor Sims and handle the maintenance, development and batch work that the system requires.

Easy Price Comparisons

Equitable purchases most of its inventory supplies from a distributor in N.Y. and then offers them at a marked-up price to all of its warehouses, Polce said. Although the warehouses are able to buy supplies on their own, Polce explained that Sims allows for easy price comparison and the chance to go for the better bargain. "The prices we get are the most cost-effective in the long run but sometimes it's hard to realize. Sims keeps the records handy so a quick analysis can be done."

The success of the Sims system spurred Equitable personnel who are involved in purchasing functions to request their own on-line purchase system, Polce said. The result was a Purchase Order System (POS), which was integrated into Sims and what began as a simple system has grown into an integrated network of inventory and purchase ordering, he said.

The POS system, which is scheduled to begin operation early in June, is expected to make the field purchasing function more effective by allowing managers to determine best purchase buys and to analyze bids.

The Art and Science of Better Communications.
GROUP DYNAMICS AND THE 3270-COMPATIBLE MARKETPLACE.

There is an art—and a considerable amount of science—to designing and delivering data communications products that meet the rigorous demands of today's 3270-compatible marketplace. Products such as display stations, printers and controllers that more dynamically and productively interact with each other, with compatible system equipment and with the people who use them. Products that save more energy, space and money. Products that perform more reliably. Products that are more readily available and more fully supported. These three products, for instance.

Product Set: Memorex 2078 Display Station; Memorex 2087 Matrix Printer; Memorex 2076 Remote Cluster Controller.

System Interfaces: IBM Systems 360, 370, 303X and 43XX.

Compatibility: IBM 327X plug compatible; Bisynchronous; SNA/SDLC (2078/2087).

Product Specifics: The 2078 Display Station is built for flexibility, operating in bisynchronous as well as SNA/SDLC environments. It is built compactly to conserve space and even features a monitor that detaches for shelf placement. It is built to conserve energy, with efficiency features that allow the 2078 to operate on 58% less power while generating 41% less heat than its IBM equivalent. It weighs just 55 pounds, some 47% lighter than the IBM competition. And above all, the 2078 is built for people. The monitor is tiltable and the screen recessed. That screen, the keytops and all moldings are non-glare. The keyboard is movable for comfortable positioning.

The 2087 Matrix Printer also features SNA/SDLC protocol compatibility in addition to bisynchronous operation. It is both fast and quiet. A microprocessor-controlled print mechanism delivers high quality printouts at speeds up to 50% faster than the IBM equivalent. A bidirectional matrix print head seeks the shortest path to the next line, backwards and forwards, maximizing throughput. Acoustical engineering reduces noise levels, while a membrane switch panel, controls and LED indicators, all located on the front panel, provide the operator with local control and printer status.

The 2076 Remote Cluster Controller is a lightweight 30-pound package that accommodates up to eight printers and/or terminals in a bisynchronous environment. It measures a streamlined 6.5" high x 14" wide x 26" deep. While the 2076 can be located as far away as 4920 feet from its attachments, its dimensions allow for convenient placement just about anywhere, singly or stacked. Standard power-on, off-line and on-line diagnostics contribute to increased uptime.

Memorex. The Communications Group. For more information, contact Laurie Schuler at 18922 Forge Drive, Cupertino, CA 95014-0784. Or call (800) 538-9303. In California, call (408) 996-9000, Ext. 222.

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Mini-Based System Fires Up Firm's Productivity

MADISON HEIGHTS, Mich. — A custom parts manufacturer here cut $500,000 from inventory, boosted productivity and beefed up customer service by installing a minicomputer-based material requirements planning system.

IPE-Cheston, a wholly owned subsidiary of Inductotherm Industries, Inc., makes induction heating equipment for heat treating steel, aluminum, copper and other materials used in the metalworking industry. The firm offers 60 to 70 different products, most of which are custom designed.

John W. Stoll, the firm's director of materials, said that a recent upsurge in orders combined with an increase in component parts to render the firm's manual recorder point/inventory tracking system obsolete.

Errors Creep In

"Our system was actually very good, but errors inevitably crept in. With growth in sales and an increase in the number of items we were controlling from 3,000 in 1976 to 6,000 today, our records became increasingly inaccurate," according to Stoll.

There was little correlation between production orders and inventory on-hand, he said. Inventory became out of balance and shortages of some items developed.

Production orders fell behind schedule and delivery orders were delayed. To make matters worse, productivity slipped when partially assembled products had to be set aside because shortages developed, Stoll said.

At that point, the firm decided that a computer might help. IPE-Cheston selected Wang Laboratories, Inc.'s VS 80 CPU to process financial applications handled by an outside service bureau. The system was initially used for accounting, budgeting and engineering design formula calculations, Stoll said.

MRP Package

Those applications were installed in late 1979 and then the firm went searching for a material requirements planning package (MRP). The firm selected a manufacturing control package offered by Computer Technology, Inc. of Bellevue, Wash.

The Computer Technology package maintains and considers all elements of the manufacturing process and provides users with information and recommendations for management control, according to Stoll.

Before installing the package, IPE-Cheston implemented a two-year education program that included 68 hours of classroom instruction for purchasing personnel and 40 hours of instruction for engineering, research and development and marketing personnel.

Managers were given a five-day off-premises training seminar, according to Stoll.

The MRP package was installed in January 1981 and fully implemented by July. Two months later, inventory accuracy had increased to 95% through cycle counts of 300 to 500 parts each week. Bill of material accuracy increased to 97% by October, Stoll said.

The system is now operating with full MRP capabilities, and Stoll said that IPE-Cheston is increasing its customer service and manufacturing productivity and cutting back on inventory.

"By July 1983 inventory should be reduced by 35% to 40% to $900,000, even though we project an increase in sales during 1982 of about 10%. This inventory reduction will improve our cash flow by $500,000 to $600,000. At the same time, based on inventory carrying charges of 2% a month, there will be a savings of $120,000 a year. That will be pure profit," Stoll said.

"Installing the system was like taking a quantum leap from a horse and buggy to a high-performance car. We now have the capability to upgrade to a computer system with up to 8M bytes of processor memory without the need for reprogramming.

"In effect, we can expand our annual sales to several hundred million dollars while operating the same basic material requirements planning system," Stoll said.

On-Hand Generation

The system now generates parts on hand, safety stock and parts allocated to complete work orders in progress, Stoll said. Using that information, the system develops a time-phased relationship of open orders and generates requirements while creating messages relative to problems or questionable conditions, Stoll said.

After the requirements are generated, a series of reports is produced. One report, called an MRP summary, provides a window of the MRP work area. Another report shows the full MRP work area.

The system can also produce a part-pegged requirements report that outlines the raw materials needed to meet a master schedule, while identifying potential shortages and critically short parts, according to Stoll.

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Financial Software Cures Health Service's Ills

HANOVER, N.H. — The West Central New Hampshire Community Mental Health Service here was faced with implementing a series of rapid funding changes recently. The double-barreled solution for handling the budget adjustments came via financial modeling software and a general ledger system, according to David M. Killory, director of administrative services.

The search for financial software began two years ago, Killory said. He needed a system that could keep tabs on 17 project sites. From each site he required accurate and timely monthly records of revenues and expenses that could be tracked against budget figures.

Killory wanted to produce reports based on this information in summary and detail form and to consolidate the data from these project sites for another set of reports at the "touch of a button."

The mental health service was faced with a dilemma. Due to government cutbacks, it could not tie up a great deal of money in an expensive system. At the same time, the staff needed a system that would allow it to track its financial position more closely and to react quickly to funding changes.

"After a nationwide search, we found the solution in our own backyard," Killory said, "and it's worked out very well."

Two Software Packages

The solution came in the form of two software packages developed by Lupfer & Long, Inc.: Spread, a financial modeling and analysis package, and Accounting Data Management (ADM), a broad-based general ledger system. Lupfer & Long recommended interfacing Spread and ADM on the nearby Dartmouth College Time-Sharing System here in Hanover.

ADM's flexibility enabled Killory to monitor all accounting data. With Lupfer & Long's help, Killory developed a chart of accounts containing all revenue and expense information. Each account number contained a different revenue or expense description.

In addition to account numbers, Killory set up an "extended key field" that contained project site codes. Using the account number and project site fields, he could select any combination of information from the chart of accounts to generate up-to-the-minute data for ad hoc as well as standard reports.

When Killory wanted to produce consolidated reports or track expenses/revenues against budget, he transferred data from ADM to Spread, which read the pertinent data that ADM extracted and generated the predefined report.

State Cutbacks

"In February 1981," Killory recalled, "we were notified that due to anticipated cutbacks at the state level, we would not receive the upcoming quarterly payment. We suspended all spending of discretionary funds and readjusted our budgets to reflect the loss of revenue."

The readjustment process was simplified using the software. For the agency as a whole, as well as for each project site, budget figures were maintained in separate "transaction" files. Monthly and year-to-date information is extracted from the chart of accounts.

Killory was able to plug in the revised budget figures and generate the appropriate reports. With the new reports at hand, it was a simple matter to make spending cuts where they would have the least impact.

No sooner was the readjustment in place when the mental health service found itself switching gears again.

"In April," Killory explained, "the state reinstated our grant. However, since unused funds lapsed at the end of the funding period, we had very little time to implement the original spending plan . . . the system allowed us to readjust our budgets and to know exactly when we were approaching the new budget ceilings. We were able to forecast accurately when all discretionary funds were expended."

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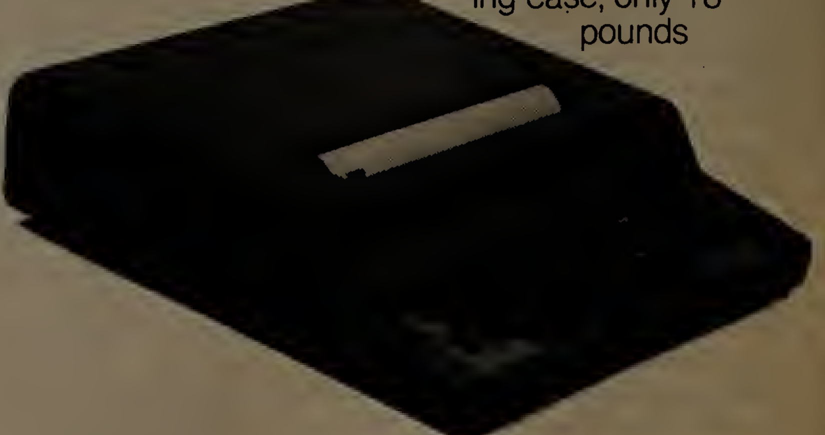

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Firm Boasts Largest Data Base of Boat Information

FORT LAUDERDALE, Fla. — How much did it cost to own a boat in 1905?

BUC International Corp., keeper of what it calls the world's largest computerized data base of boat information, has the answer.

BUC is using a Hewlett-Packard Co. HP 3000 Series III processors with 1M byte of memory, three HP 7925 disk drives with 120M bytes of memory each and a 1,600 bit/in. tape for disk backup to manage two publications and to direct numerous consulting contracts, according to the firm's president, Walter J. Sullivan.

The firm publishes an annual *New Boat Price Guide* and a semiannual *Used Boat Price Guide*. The latter lists more than 300,000 boats with a description, sales history and estimated fair market value. In addition, some 2,500 boating manufacturers are listed, Sullivan said.

The HP 3000 sorts and stores data on boats and manufacturers. The information is then transferred to a phototypesetting system. In addition to the two boat publications, the computerized data base allows the firm to offer market research services to marine surveyors, boat and accessory manufacturers, dealers and brokers, large corporations and the U.S. government, Sullivan said.

There are three main files in the system that pertain to catalog production. A Boat Master File consists of about 300,000 boat models. The file lists a description of each model, its name, length, manufacturer's name and data on the engine, rigging and hull, Sullivan said.

The second file is the Boat Manufacturer's File. It includes the names and addresses of 10,000 vendors. About 2,500 of those vendors are listed in the two publications, Sullivan said.

The third file is the Sales Report File, which is updated daily with pleasure boat data.

Data entered into the system is obtained in two ways. Many vendors supply information when the boat is sold. The company also sends out informational requests to boat vendors several times a year, Sullivan said.

Reports containing several hundred details of each sale are entered into the sales report master file. The processor proofreads the documents by comparing the data with a variety of tables and descriptions in the Boat Master File.

An econometric model is used to compute an approximate current market value for each boat. The model depends on about 200 variables and about 200,000 records in the sales report, Sullivan explained.

"When it's time to print the guides we have up-to-date information at our fingertips. We have a special program that converts computer codes into character codes for the typesetter. We can prepare some 1,200 camera-ready pages of listings in hours," Sullivan said.

There are several other typesetting programs on the HP 3000 processor that allow BUC to prepare special reports in various typefaces and to prepare camera-ready copy whenever necessary, according to Sullivan.

"The HP 3000 has contributed to our growth in a number of ways we never expected. For example, our data entry function has been speeded up considerably. What was a week's work five years ago now only takes one day. And the information is more accurate," Sullivan said.

He said that he purchased the HP 3000 because it was capable of interfacing with non-HP peripherals. Sullivan said he also liked the processor's reentrant code, stack architecture, graphics and logging capabilities and expandability to 2M bytes of memory.

The BUC system has a 1,600 bit/in. tape drive for backup and nine HP 2645 and 2621 terminals. The processor interfaces with an Itek Corp. phototypesetter and a Printronics, Inc. 300 line/min printer, Sullivan said.

The processor uses HP operating software and features Cobol, Basic, SPL, RPG and Fortran programming languages. The firm used HP's Image Query data base management system to create its own applications software, according to Sullivan.

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THE FAULT TOLERANT REVOLUTION

(Or how the Stratus hardware solution has made the software fault tolerant solution obsolete.)

Software means programmers, and programmers are expensive. It's plain to see that if you invest in a software-based fault tolerant system you also get a ball and chain in the form of ever increasing expenses and performance penalties.

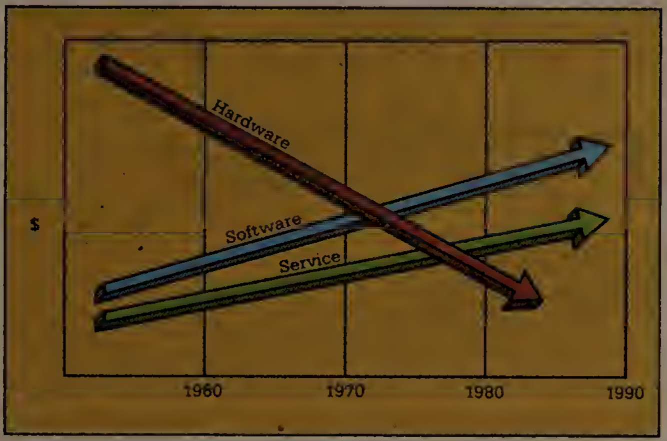
When the first fault tolerant computers were designed, software was the way to go. Hardware was expensive. But in the last 5 years there has been a dramatic reversal. People costs are going through the roof, while hardware components are the bargain of modern times. Stratus is the first company to build a continuous processing computer that takes full advantage of the hardware revolution...a computer that is designed to the economic realities of the present and the future.

As opposed to the Stratus hardware fault tolerant solution, the software approach requires performance stealing software in increasing increments. The more reliability required, the more software required, and the greater the burden.

Why more hardware works better than more software.

The crux of the problem with a software-based system is that it requires complex, performance stealing software to provide a system that will not stop. This software "robs" the system of resources because it uses processing cycles to pass status and checkpoint information back and forth between two computers. What's more, this passing of information usually occurs at four levels: operating system, user program, file management, and terminal control.

Stratus has eliminated this software burden with duplicate hardware components tightly coupled, dedicated to performing the same tasks at the same time. It's like having two computers in one, rather than two separate computers. Hardware checking logic continuously inspects for errors. When a failing component is found, it is stopped instantly. This means the Stratus/32 Continuous Processing system can: 1) Prevent a fault from contaminating the rest of the system. 2) Eliminate the need for complex recovery software. 3) Reduce repair time and service costs by pinpointing the failed component.



While software costs will rise because they are people dependent, experts agree that hardware costs will continue to fall.

Meanwhile, the duplicate partner is continuing with business as usual, without interruption.

Hardware is easier to implement.

One of the nasty side effects of software-based fault tolerant systems is that the analyst/programmer has the added complexity of working with two computer systems. Most are not accustomed to working this way. As a result, not only does application development require more time, but there is a constant risk of checkpointing too often, and thus destroying performance.

With the Stratus hardware-based solution, on the other hand, the analyst/programmer might as well be dealing with a conventional computer...one, not two. Stratus provides a familiar environment. The analyst/programmer doesn't have to make an extra effort to get continuous processing. He/she can take it for granted, with no performance penalty.

Stratus open ended growth. You add on, instead of replace.

The Stratus/32 is designed so that you can buy what you need when you need it...not more than you need in order to accommodate future growth. Yet, as you grow, you can *build* on what you have rather than experience the trauma of *replacing* what you have.

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A benefit not to be overlooked in the hardware approach to fault tolerance is the price advantage. The Stratus/32 Continuous Processing system is price/performance competitive with conventional computers that *don't offer a fault tolerance capability.* A fully duplexed configuration with 2 megabytes of memory, peripherals, and software can be purchased for under $130,000.

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Oil Firm Finds Method to Improve Its Printing

OIL CITY, Pa. — When Quaker State Oil Refining Corp. recently discovered its method of printing data-processing-related documents was inadequate, it installed a nonimpact printer in order to improve the output level. However, that method was still too slow, according to Bob Teifer, manager of Corporate Information Services.

As an alternative, Quaker State switched to a Honeywell, Inc. Page Processing System II (PPS II). The printing system boosted output from an average of five page/min to about 90 page/min. In addition, Teifer said the PPS II allows the firm to distribute about 500,000 pages of monthly reports in two days, "faster than ever before."

The firm is using PPS II metal format cylinders to replace the more expensive preprinted forms it used before. The metal format cylinders are utilized to prepare various invoices, accounts receivable statments and crude oil purchase and production accounting reports.

"The format cylinders print the standard forms as well as the variable information at the same time. This feature, combined with the higher throughput, has enabled us to issue invoices, for example, much faster than before.

"The efficiency has improved Quaker State's cash flow and saved thousands of dollars because we don't have to stock a large preprint forms inventory," Teifer said.

The Honeywell PPS II interfaces with Quaker State's central processor, a 2M-byte IBM 4341 Model Group 1. Teifer said the PPS II has eliminated post printing operations such as collating, hole punching and addressing.

Since the PPS II has a built-in Honeywell Level 6 processor, it can be programmed to accept output directly from the IBM processor without reprogramming or recompiling, Teifer said.

Quaker State's printer configuration includes a Level 6/43 processor with 256K bytes of memory, 80M bytes of formatted disk storage, an 8,000 line/min printer, one stacker bin with eight 500-sheet pockets, a three-hole punch mechanism and a CRT terminal. The PPS II can print in black or green.

Freight Company Solves Billing Backlog

NEW YORK — When Nippon Express U.S.A., Inc. gets together with its computer company, everyone speaks the same language.

The shipping freight company recently installed a computer system developed by TRW-Fujitsu Co. Coincidentally, both companies are subsidiaries of Japanese firms and do most of their business with the U.S.

Nippon Express employs 400 people in 32 locations throughout the U.S. About 80% to 90% of the firm's business centers around shipping goods between Japan and the U.S.

Each branch handles its own billing and sends a total of 15,000 invoices to the New York headquarters. In addition, thousands of accounts payable are posted every month and about 300 checks are written each day. In the past, all of these transactions were processed by financial service bureaus, the firm's President Shozo Hosaka said.

With such a heavy data processing work load, a backlog developed. As billings increased, it sometimes took two weeks to get processed data back from the service bureaus. This delayed information hindered financial planning activities, according to Hosaka.

Installed TFC 8540

Nippon Express installed a TRW-Fujitsu TFC 8540 small business system to solve the problem. The system has 1.2M bytes of main memory, 300M bytes of fixed-disk storage, 40M bytes of cartridge disk storage and a tape drive for data storage. I/O devices include six CRT terminals, two serial printers and one 670 line/min printer, Hosaka said.

The shipping firm uses customized applications programs, including general ledger, budgeting, accounts receivable and sales analysis, the company president said.

"The system has increased productivity and reduced costly errors. For example, the hundreds of checks we issue daily were previously written manually.

"This was tedious for the bookkeepers and often resulted in errors. With the TFC 8540, the job is completed faster, is highly accurate and the final printed check looks more professional," Hosaka said.

"We are growing rapidly and our billings are increasing at the same time. We have projected that our costs will remain constant, however, because the system we are using will handle the increased load," according to Hosaka.

In addition to cutting the time it takes to process data, the system has also given Nippon Express managers the ability to access companywide financial data, he said.

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There are dozens of ways to effectively use the colorgraphics created by a Ramtek 6211. Computer aided design; process monitoring & control; business information systems; mapping research & science—to name a few of them.

The 6211 is a complete terminal with a high resolution color monitor and display electronics. You can display 16 colors at once from a palette of 64 and choose screen resolutions of 640x480 or 512 picture elements. The 6211 also offers a light pen or graphics tablet as options, as well as a rack-mount version.

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A full range of off-the-shelf graphics software packages are available for the 6211. And Tektronix 4014 emulation allows Tektronix users to work with 16 colors instead of just one.

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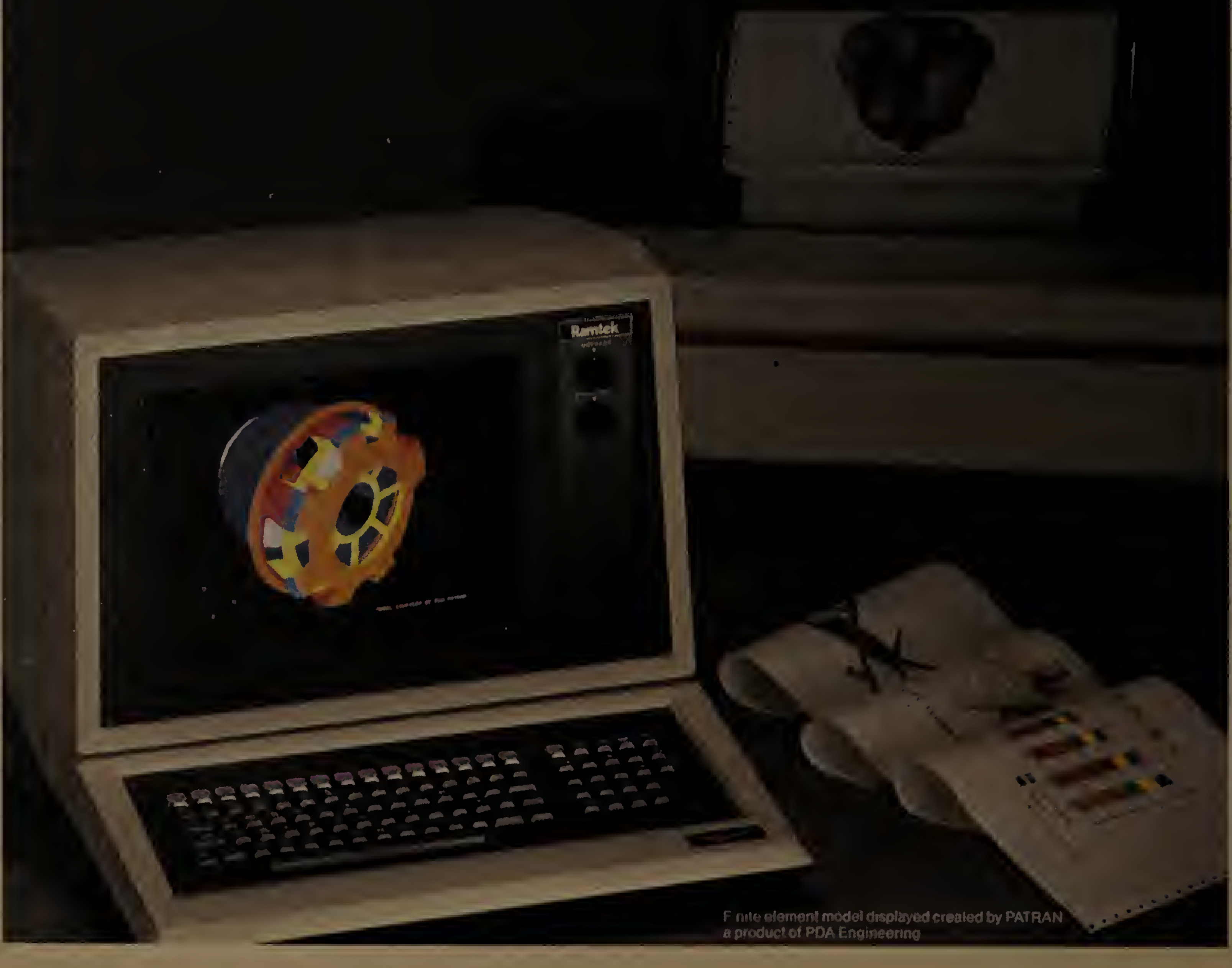

Finite element model displayed created by PATRAN
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In Building Own System

Drywall Supplier Uses Software for Foundation

RENTON, Wash. — When Beadex Manufacturing Co.'s sales rose from $1.2 million in 1972 to $7 million in 1980, the secretary/treasurer of the company decided it was time to stop farming the data processing out to an outside service bureau. Doug Houser decided to build the system from the software up.

While the general ledger and accounts payable and receivable were done by an outside service, the payroll and inventory were done manually in-house. The service bureau cost some $14,000/year.

Established in 1965, Beadex is a leader in the sale of drywall accessory products in the Northwest. It manufactures joint compounds, corners and trims, ceiling and wall texturing compounds and other accessories for commercial and residential construction.

Houser, who had previous experience with computer installations while working at a large CPA firm, initiated the idea of buying the software first.

"Our philosophy was to find a good software system," Houser said. "There is a lot of good hardware, but it doesn't do a thing without the proper software.

"When we started to compare systems, we looked for simplicity and completeness of report formats," Houser said. "I was especially impressed with The Office Manager, Inc. [TOM] Distributor Business Management System because of the format and completeness of the general ledger and financial statement systems and the flexibility that allows us to tailor reports to meet our needs."

Consultant's Support

With the help of Dataflow, a Seattle-based TOM-licensed software consultant, the software was purchased along with the Wang Laboratories, Inc. Wang 2000 VP minicomputer. The installation was in full operation within six months after the order was placed, Houser said.

He credited the rapid installation to Dataflow's support. "Their response to any question is very fast. Ongoing, local support is critical to a successful installation. The software vendor must be available on the spot to make changes or explain why things aren't working.

"I think we were one of Dataflow's first customers," Houser said. "We got the software for a very reasonable price of $11,500."

Increased DP Flexibility

Since installing the system in 1979, the company has slashed payroll preparation time from two days each week to a half day every two weeks, cut 40% to 50% off the time the service bureau took to perfom other accounting tasks, added functions and gained increased data processing flexibility, Houser said.

At a total cost of $75,000, Houser estimated that the system paid for itself within two years after it was purchased.

The TOM/Wang system allows the company to produce more work with the same staff. "We are producing more information for management decisions, and we have increased flexibility to respond to management needs," Houser said. "We don't need to add people proportionate to our growth."

Variety of Reports

The TOM system allows Beadex to produce a variety of management information reports. A daily journal describes each entry made that day and summary reports are printed as needed.

A customized sales analysis report, used in conjunction with aging reports and a customer credit transaction register, is "invaluable in determining credit status," according to Houser. "The system makes it possible to immediately evaluate a customer's credit on any given day," he said.

Houser said that the system also aids his company in providing better production control and speeding shipments.

"There's a stock status report that tells us what is on order and from whom and when it will be shipped. This information was produced by our previous system, but timely and accurate reporting was impossible," according to Houser.

"We calculated it manually or had someone count the stock on hand. Or, we'd quote a rough delivery date. Now if a customer needs the product in two days, we can tell him immediately if there's any chance of getting it to him," Houser said.

Houser warned that computer selection is difficult for the first-time user. "I think the software decision is not emphasized enough. Most times, it's the hardware people who are pushing the system.

"You've got to know up front what the software is going to do and what are its requirements," he said. "You must understand how elements of the system interact. None of this is as easy as the many salesmen might make you think."

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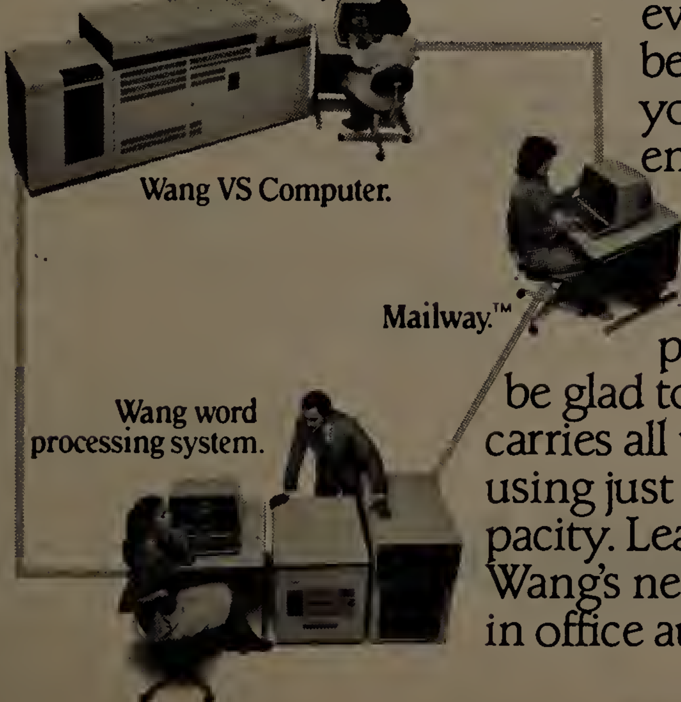
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From Mcauto

Training Programs Offered in CICS

ST. LOUIS — McDonnell Douglas Automation Co. (Mcauto) is offering a series of training programs in CICS said to offer a comprehensive approach to gaining proficiency and skills in data base technology.

Classes are available in St. Louis, Dallas, Chicago and San Francisco, a spokesman said.

The programs, which combine lectures and lab application programs, are divided into two main groups: application design and application program coding, according to the spokesman.

Courses include a five-day CICS/VS application design course designed to provide application analysts and programmers with an introduction to CICS/VS and a 10-day CICS/VS command-level coding course for application programmers who want practical training to write CICS/VS command-level Cobol programs.

Another course is a three-day CICS/VS basic mapping support course for application programmers and systems analysts responsible for designing and implementing user-oriented screens for video display units.

Also included is a five-day DL/1 coding for CICS/VS course for the programmer in charge of writing and maintaining Cobol programs using DL/1.

A 10-day IMS data base design course is offered to provide an understanding of IMS/DB storage structures, access methods, inter-data base relationships and all IMS data base facilities, the Mcauto spokesman said.

Courses cost between $350 and $1,200 if taken in one of the cities listed above or between $2,800 and $12,000 if administered on an in-house basis, according to the spokesman.

Further details can be obtained from Joan Grillion at McDonnell Douglas Automation, P.O. Box 516, St. Louis, Mo. 63166.

Timely Delivery Is 'All-Rida' With IBM 4341

BOISE, Idaho — They can be mashed, fried, boiled, browned and baked. But Ore-Ida Foods, Inc. wanted to make sure its potatoes are delivered — on time.

In addition to its line of frozen french fries, the company also wanted to ensure delivery of its other frozen food products, so it turned the order entry and distribution system over to a mainframe computer.

Based here in potato country, Ore-Ida buys more than a million tons of raw produce from farmers in eight states. The firm processes the vegetables in four factories around the clock to produce more than 350 individual products. These are stored in 15 warehouses to fill about 55,000 orders placed each year by supermarkets, fast-food establishments, restaurants and institutions such as hospitals, according to an Ore-Ida spokesman.

"When orders are phoned or wired in by our 250 brokers, we virtually guarantee on-time delivery," Richard E. Johnson, general manager of customer service, said. "The foundations of our customer service program are the computer and a broad, efficient distribution system. On-time delivery rates are around 96% and customers get exactly what they ordered 99% of the time."

Customer service hotlines are open day and night. Emergency orders can be in and out of the door in 24 hours, Johnson said. The system also lets customers revise their orders up to 12 hours before shipment.

Programming for the IBM 4341 system, using the DOS/VSE operating system, is done in-house by a staff of 25, according to Ore-Ida's general manager of administrative systems, Glen Fairbourne.

To begin the order entry procedure, about 10 computer terminal operators key in customer numbers to display various data. Next, the customer's requested items and quantities are keyed in, an IBM spokesman said.

At the time orders are called in, the food brokers are permitted to pool several orders to make a full load — entitling his own customers to a discount. The operator relies on the computer to calculate the weight of orders to verify full-load status and to check accuracy.

With rail and truck transportation expenses mounting, Ore-Ida recently installed a computerized "least-cost" approach to warehouse shipments. "What this means," Fairbourne explained, "is that when the order is ready to go, the computer checks inventory availability at each warehouse, distances for delivery and the promised delivery date. This ensures appropriate action based on service and cost parameters."

Ore-Ida's traffic department here assigns a carrier who sends the load on its way. The system was put to the test when the firm acquired two subsidiaries, Foodways National, Inc. and Gagliardi Brothers, Inc.

"When Foodways joined Ore-Ida's distribution system, total orders increasd 30% and the number of brokers and sales managers we dealt with rose 40%," Johnson said.

START TO FINISH COVERAGE OF NCC AND EVERYTHING IN BETWEEN

We start with our May 31st National Computer Conference Preview Issue. Everything you need to know about the show before it's happened. We'll include the sessions, tell you who's speaking, review the exhibitors and what they'll be exhibiting. Extra issues will be distributed at the *Computerworld* booth at NCC. Black and white ad close is May 21st. Color close is May 14th.

Then our NCC Show Issue comes out June 7th, the day of the show. It will have last-minute show information, speech previews and other show details. Pick up a copy at the *Computerworld* booth. Black and white ad close is May 27th*. Color close is May 21st.

Finally, our June 14th NCC Wrap-Up Issue will have complete coverage of all that happened, prepared by our 35-person editorial staff. You'll read who said what, who introduced what and how it works, and review the show's features and highlights in words and pictures. Black and white ad close is June 4th. Color close is May 28th.

Contact your *Computerworld* representative for complete ad details for any or all of these Special Issues. Or, to reserve ad space, call Frank Collins at (617) 879-0700.

*Note early close.

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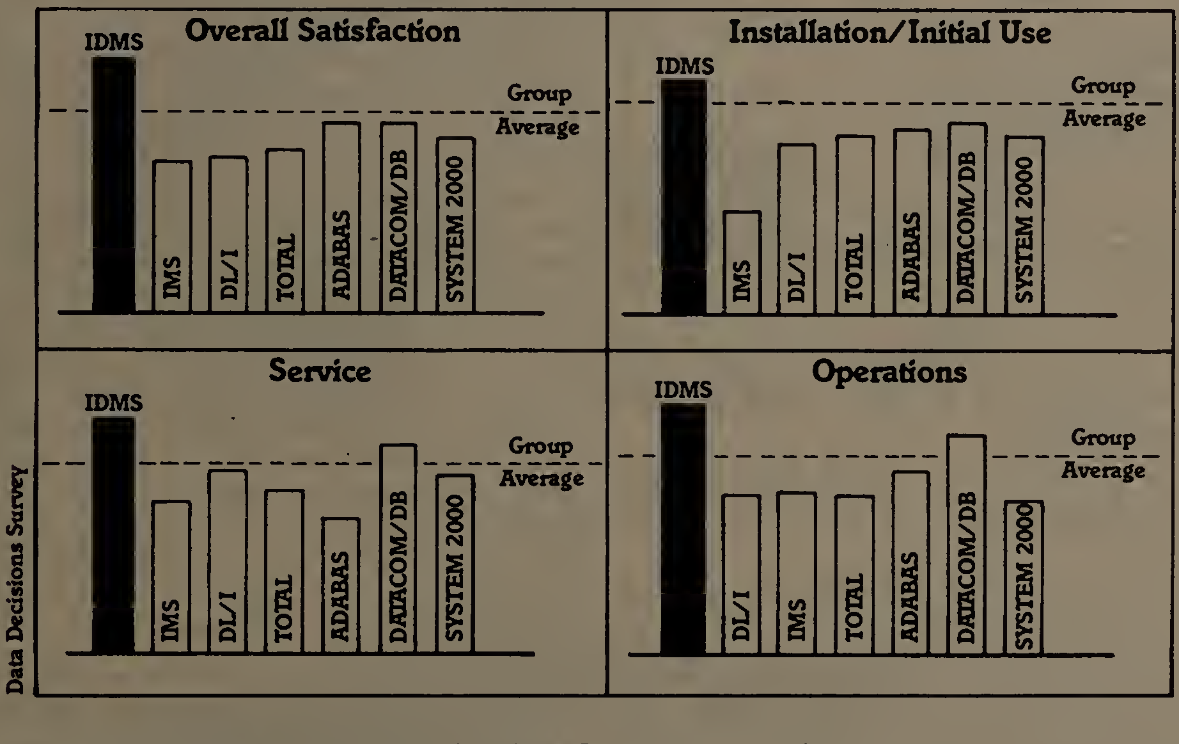
Data Decisions' 1981 survey shows Cullinane's Integrated Database Management System (IDMS) to be the number one choice among DBMS users. Once again, IDMS has achieved higher ratings than any competitive product in the categories of reliability, ease of installation and use, quality of technical support and overall satisfaction. Additionally, a recent Datapro Research survey shows IDMS to be #1 in more categories than any competing database management system.



What does this mean? It means that IDMS continues to live up to our promises of high performance and ease of use. That the quality of our documentation and training remains unsurpassed. And that our customer service is faster and more thorough than any other supplier's. Who says so? The most impeccable source available — the industry's DBMS users.

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Boston, MA	July 15
Bridgeport, CT	June 29
Buffalo, NY	June 9
Calgary, ALT	June 8
Chicago, IL	June 22
Cleveland, OH	June 23
Columbus, OH	June 8
Dallas, TX	June 24
Danbury, CT	May 25
Denver, CO	June 8
Des Moines, IA	June 22
Detroit, MI	May 20
Greensboro, NC	May 18
Greenville, SC	June 1
Halifax, NS	June 16
Hamilton, ONT	June 17
Hartford, CT	June 17
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Memphis, TN	June 29
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Milwaukee, WI	June 8
Minneapolis, MN	June 24
Moline, IL	June 3
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Morristown, NJ	May 19
New York, NY	May 20
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New York, NY	July 29
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Calendar

May 26-28, Boston — **Procedure Formation.** Contact: Information Methods (U.S.A.) Corp., 504 Totten Pond Road, Waltham, Mass. 02154.

June 1-2, New York — **The Second Phase of Office Automation.** Contact: The Yankee Group, 89 Broad St., Boston, Mass. 02110.

June 1-4, Boston — **CICS/VS Application Design.** Contact: Computer Education Services, Inc., 739 Boylston St., Boston, Mass. 02116.

June 2-4, Orlando, Fla. — **ACM/SigMOD International Conference on Management of Data.** Contact: Association for Computing Machinery, 1133 Ave. of the Americas, New York, N.Y. 10036.

June 2-4, San Diego — **Advanced DP Auditing Concepts.** Contact: Marge Umlor, EDP Auditors Foundation, 373 S. Schmale Road, Carol Stream, Ill. 60187.

June 3-4, Boston — **Color and the Computer.** Contact: Educational Resources Associates, Inc., Suite 500, 209 Harvard St., Brookline, Mass. 02146.

June 3-4, Anaheim, Calif. — **Acquiring and Installing Your First Business Computer.** Contact: Data Processing Management Association Education Foundation, Suite 1016, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

June 3-4, St. Charles, Ill. — **Information Processing Seminar.** Contact: Arthur Andersen & Co., 69 W. Washington St., Chicago, Ill. 60602.

June 3-4, Raleigh, N.C. — **SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

June 6-8, Danvers, Mass. — **Office Automation in Banking.** Contact: Institute for Graphic Commmunication, Inc., 375 Commonwealth Ave., 4th Floor, Boston, Mass. 02115.

June 7-8, Washington, D.C. — **Software Requirements Analysis and Design.** Contact: P.O. Box 91295, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

June 7-8, Denver — **Mumps Development Committee.** Contact: The Mumps Development Committee, 1703 Gough St., San Francisco, Calif. 94109.

June 7-8, New York — **Fundamentals of Data Processing and Telecommunications.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

June 7-8, Pittsburgh, Pa. — **Industrial Application for CAD/CAM & Computer.** Contact: Eloise Wenker, National Computer Graphics Association, 2033 M. St. N.W., Washington, D.C. 20036.

June 7-9, New York — **Improving Computer-Based Accounts Payable Systems.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

June 7-10, Edmonton, Alta. — **Project Management.** Contact: Bill Schoonmaker, BSI, 4720 Montgomery Lane, Bethesda, Md. 20814.

June 7-10, New York — **Computer Contracts.** Contact: Ruth K. Dargis, Registrar, Brandon Consulting Group, Inc., 1775 Broadway, New York, N.Y. 10019.

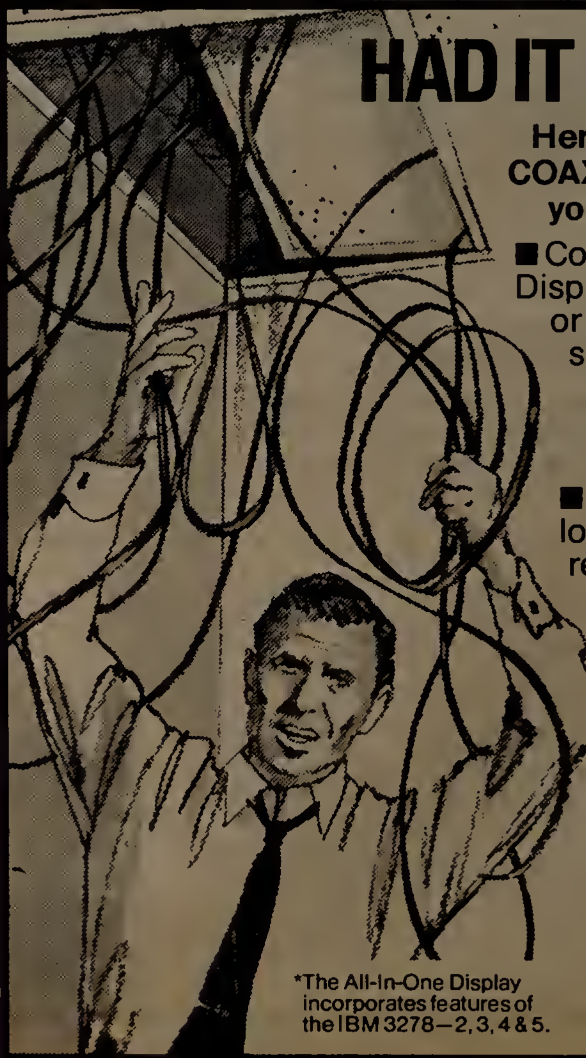
June 7-10, Washington, D.C. — **Operational Data Security Workshop.** Contact: Data Security Workshops, Inc., Six Swarthmore Lane, Dix Hills, Long Island, N.Y. 11746.

June 7-10, New York — **DMS/CICS/VS Design and Programming.** Contact: Ilene Zelin, Comped, 1133 Ave. of the Americas, New York, N.Y. 10036.

June 7-10, Boston — **IMS/VS-DB (DL/1) Application Programming.** Contact: Computer Education Services, Inc., 739 Boylston St., Boston, Mass. 02116.

June 7-11, Greenwich, Conn. — **Systems Analysis Workshop.** Contact: Bill Schoonmaker, BSI, 4720 Montgomery Lane, Bethesda, Md. 20814.

June 7-11, Denver — **Auditing in the Contemporary Computer Environment.** Contact: Marge Umlor,



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Calendar

EDP Auditors Foundation, 373 S. Schmale Road, Carol Stream, Ill. 60187.

June 7-11, Denver — **Eleventh Annual Meeting of the Mumps Users Group.** Contact: Mumps Users Group, c/o Professional Associates, 2012 Big Bend Blvd., St. Louis, Mo. 63117.

June 8-9, New York — **Confronting the Communications Revolution.** Contact: Business Week Executive Programs, 1221 Ave. of the Americas, 40th Floor, New York, N.Y. 10020.

June 8-9, Chicago — **Omegamon/CICS.** Contact: Candle, Suite 2404, 10880 Wilshire Blvd., Los Angeles, Calif. 90024.

June 9-10, London — **World Electronics — The U.S., Japan and Europe: Competition or Collaboration?** Contact: Fran Martin, *Financial Times*, Business Enterprises Division, 135 W. 50th St., New York, N.Y. 10020.

June 9-10, Boston — **Computer Control & Audit.** Contact: The Foundation for Continuing Education, 25-D Olympia Ave., Woburn, Mass. 01801.

June 9-11, Philadelphia — **Vendor Seminar on Computer Systems for Physicians and Dentists.** Contact: Alan C. Swan, The Educational Cooperative, 245 S. 17th St., Philadelphia, Pa. 19103.

June 9-11, Washington, D.C. — **Federal ADP and Office Automation Procurement.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

June 9-11, Los Angeles — **The New Generation in Automated Manufacturing Systems.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

June 9-11, Amsterdam, Holland — **Automated Office of Tomorrow.** Contact: Institute for Graphic Communication, Inc., 375 Commonwealth Ave., 4th Floor, Boston, Mass. 02115.

June 9-11, New York — **Project and Team Management Workshop.** Contact: Anthony Formica, Yourdon, Inc., 1133 Ave. of the Americas, New York, N.Y. 10036.

June 9-11, Boston — **Word Processing Supervision Workshop.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

June 10-11, Boston — **Software Requirements Analysis and Design.** Contact: Education Foundation of the Data Processing Management Association, P.O. Box 91295, 5959 W. Century Blvd., Los Angeles, Calif. 90009.

June 10-11, Boston — **CAD in Mechanical Engineering.** Contact: Digital Equipment Corp., Education Services, 12 Crosby Drive, Bedford, Mass. 01730.

Call For Papers

DATA ENTRY MANAGEMENT ASSOCIATION (DEMA) '82, New York City, Oct. 4-6

Dema is seeking papers for its conference, "A New Face for Data Entry." Papers are welcome for review on all topics related to data entry, distributed processing, word processing with emphasis on data entry, human/machine interface and new technology in the field.

Papers with a brief autobiographical sketch should be sent to Marilyn S. Bodek, Dema, P.O. Box 3231, Stamford, Conn. 06905.

COMPUTER-AIDED DESIGN/COMPUTER-AIDED MACHINERY (CAD/CAM) '82, Charlottesville, W. Va., Oct. 25-28

CAD/CAM is seeking papers for its first workshop on interactive computing in electrical engineering education. The major purpose of the workshop is to identify the advantages of and the impact that CAD/CAM should have on electrical engineering education.

Papers are solicited on the following topics in relation to CAD/CAM's potential impact in these areas: personal computers, knowledge base required for future graduates, mechanisms for sharing resources, models for university/industry cooperation, courses and curricula, future direction of research in support of industrial applicatons and interactive graphics.

Four copies of a 300-word summary should be submitted by June 1 to Dr. Harlan Mills, IBM-FSD, 6600 Rockledge Drive, Bethesda, Md. 20034.

WORD PROCESSING & OFFICE TECHNOLOGY TRADE SHOW & CONFERENCE '82 (WPOE), San Jose, Calif., Oct. 26-28

Papers are being invited by WPOE for the October conference entitled "The Automated Office." Topics and tutorials include the entire spectrum of the electronic office environment.

Qualified companies or consultants should submit a 200-word abstract for consideration. Abstracts should be mailed to Charlcie Grasser at Suite 1014, 491 Macara Ave., Sunnyvale, Calif. 94086.

INTERNATIONAL CONFERENCE ON COMMUNICATIONS (ICC) '83, Boston, Mass., June 19-23, 1983

ICC is accepting papers for its conference. Papers on the following communications subjects are invited: electronics, software, protocols, switching, systems disciplines, terminals, theory, computer communications, social implications of technology, satellite and space, telecommunications standards, transmission systems, signal processing, terminals for the handicapped, adaptive high-frequency communications, telecommunications standards, transmission systems, signal processing, terminals for the handicapped, adaptive antenna systems, spread spectrum, deep space, packet switching, military, office systems, computer privacy crypto, telemetry, tracking and command, coding, synchronization and timing and advanced concepts in modulation and demodulation.

Completed manuscripts and abstracts must be received by Nov. 1. Notification of acceptance and author kits will be mailed Feb. 8, 1983. Submissions should be sent to Dr. L. J. Ricardi, MIT Lincoln Laboratory, P.O. Box 73, Room D-422, Lexington, Mass. 02173.

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DATASTREAM

EDITORIAL

Outdated Mentality

It is time the general press was held accountable for its irresponsible treatment of "computer stories."

While some daily newspapers such as *The New York Times* and *The Boston Globe* are making intelligent efforts to explain to the public the intricacies of information systems and the computer industry, many news-gathering organizations still portray computer systems as error-prone machines with no redeeming social value.

Stories and headlines about computer snafus may be fun to write, but they betray an outdated mentality in these otherwise professional news organizations when it comes to dealing with computer technology. Nontrade journalists would do well to familiarize themselves with the time-honored DP term "garbage in/garbage out."

Maybe then they would think twice before blaming a computer for a human error, as United Press International did in a recent story headlined "Nincomputer Jailed Woman for 2 Months." That story began: "A computer mistake that landed a housewife in the Dade County Jail and then in a mental hospital has been rectified, but it took more than two months to do it."

There are actually two conflicting accounts of the events that culminated in the jailing. If UPI had done its job properly, it would have discovered that proponents of both stories blame human elements — not the computer — for the debacle.

A second instance of anticomputer bias and the misreporting it engenders appeared in the April 28 edition of *The Wall Street Journal* in a story headlined "But Its Computer Took a Costly Nap." According to the story, Citibank was subjected to "an embarrassing computer snafu" that snatched defeat from the hands of victory in a $100 million bond auction. The reader was apprised of this in the second paragraph of the story.

Not until the eighth paragraph did the *Journal* report that a Citibank staff member confirmed the existence of a "computer problem" but "turned aside a reporter's request for further details on grounds that the responsible official was 'tied up.' "

The *Journal* can claim it tried to find out the specific problem but was rebuffed. The problem with that defense is the story began by telling the reader about the computer snafu, creating the impression that this was just another in a continuing series of computer mistakes. Only at the end did the story convey the indirect impression that a human error may have been involved. But the fact is, many readers never go beyond the first two paragraphs of most stories.

Sometimes we wish computers were the monsters they are usually made out to be in the general press. Then they could take their electronic revenge on the increasing number of newspapers that insist on maligning them but, at the same time, depend on them for their day-to-day publication.

DATA PAST

Five Years Ago
May 23, 1977

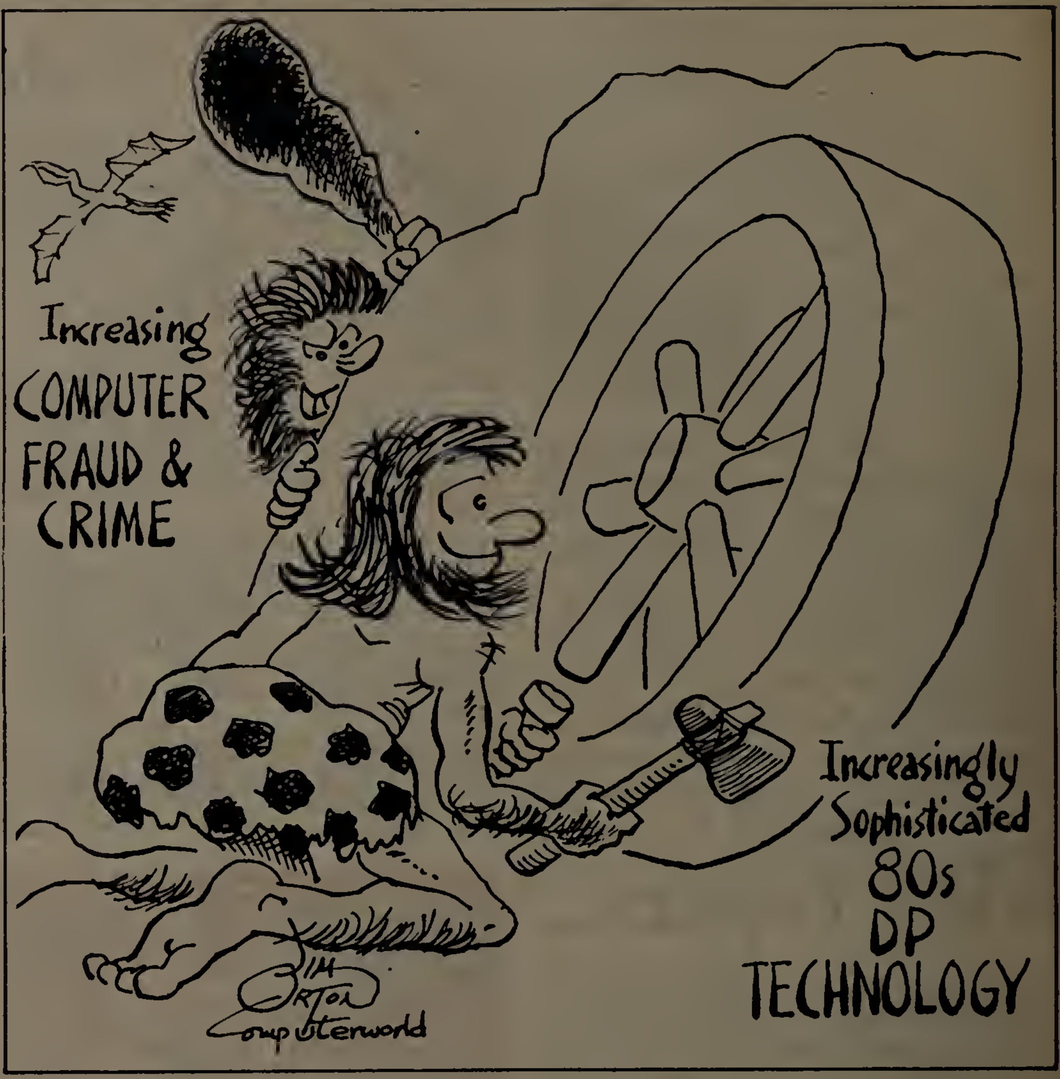
MINNEAPOLIS — The "Colt 45," which got derailed after IBM introduced its 370/138 and 148, was back on the track and formally announced as part of Control Data Corp.'s IBM-compatible Omega line.

The Omega 480-I and 480-II, which were offered in six models, were intended as direct replacements for IBM 370/135 to 148 CPUs, CDC said.

Ten Years Ago
May 10, 1972

SAN FRANCISCO — Itel Corp. offered a packaged lease program on IBM 370 equipment that gave the user the same type of discounts that were available at the height of 360 leasing.

With the plans, the user could get a discount of up to 15% over what he would pay in IBM rent on a three-year lease.



LETTERS

Symptom of Shortage

In "Branscomb: Faculty Shortage Hurts Productivity" [CW, April 26], Cornell University President Frank H.T. Rhodes' suggested remedy spoke only to a symptom and not the real problem. The problem is that we are not producing enough Ph.D.s in computer science, computer engineering and information systems.

Raising the salaries paid to present Ph.D.s will not solve the problem, although it might help maintain quality. Increases in salaries for computer scientists and engineers brought on by the shortages in these areas have been very inflationary over the past 10 years.

Those who have been in control of federal funds that could have been used to reduce this problem by now should have diverted funds to this new discipline.

Yes, equipment that is up to date is important to maintain a quality doctoral program in some areas of computer science. But equipment will not produce more Ph.D.s. The only short-term (five to 10 years) solution is to provide more support for more doctoral candidates.

Fellowships, because they allow students to devote full time to their classes and research, shorten the time it takes to produce a Ph.D. by one, two or three years. Additional fellowships would provide support for more candidates and enable them to finish sooner.

If something is not done now to increase the number of doctoral students in computer science, computer engineering and information systems, then we can expect to see a steady decline in the quality of these programs in our colleges and universities.

John W. Hamblen
Professor of Computer Science
University of Missouri-Rolla
Rolla, Mo.

Unique Experience

Last night an old and dear friend of ours passed away. At exactly 7:59 p.m., L320 finished her chores for the last time and may have set a record for the longest continuous service for a program in computer history.

How about performing faithfully each and every week for 22 consecutive years?

What other computer program can say that it had been intimate with such luminaries in the computer business as Univac I, Spectra 35, Spectra 45, 360/40, 370/155 and 3033N?

L320 even logged some travel time over the years, having performed at General Electric Co. in Louisville, Ky., and the Franklin Life in Springfield, Ill.

L320 was the last program of our old field recordkeeping system here at the Life and Casualty Insurance Co. to be converted to a new data base environment.

This system was designed for a Univac I and put into production in August of 1960.

To make a long story short, we acquired a Univac I simulator in 1968 that enabled us to execute Univac I programs under IBM's DOS, which we had been doing until yesterday.

Having gotten into the computer programming business in 1956, by the time a 360/40 was bought in 1968 we had some 250 man-years invested in Univac I code.

Because of the simulator, not a single line of this code had to be reprogrammed because of the incompatibility factor.

Needless to say, our experience has been a little unique.

Morgan W. Huff
Vice-President
Life & Casualty Insurance
Co. of Tennessee
Nashville, Tenn.

SOFTLINE/Werner L. Frank‡

Computer Basics for the Uninitiated

'The popularity of personal computers such as Apple Computer, Inc.'s Apple II and Radio Shack's TRS-80 has naturally generated a vast supporting literature. User guides proliferate, explaining operations, programming and hardware features.'

The computer has already begun to invade our society in many directions. Almost daily, people with no previous exposure to computers suddenly discover the need to understand something about them.

How do you begin the computer education of a noncomputer person? Even more important, what content should be selected for such a program?

As the use of the computer steadily increases, the need for improved computer education will also increase. Computer knowledge has always been important for direct end users.

Now, recipients of data processing information are also becoming curious about the computer.

As a minimum, some understanding of the jargon of the trade is becoming a cultural necessity for nearly everyone.

Variety of Responses

A variety of responses have arisen to meet this need. Notably, in the last few years a vast array of computer literature has emerged. Sizable book racks, now commonly seen in computer retailing outlets, carry literature that ranges from descriptions of software available for business or entertainment to technical descriptions and learning aids.

The popularity of personal computers such as Apple Computer, Inc.'s Apple II and Radio Shack's TRS-80 has naturally generated a vast supporting literature. User guides proliferate, explaining operations, programming and hardware features.

There are also many books available that investigate a single topic. An operating system, such as Digital Research, Inc.'s CP/M or Bell Laboratories' Unix, or a computer language such as Basic or Pascal, may form the subject of an entire volume.

At a somewhat less academic level there are a variety of popular monthly periodicals that supply timely exposition about the computer. Some of the magazines, such as *Byte*, have even more content and larger distribution than most of the older and more sophisticated trade journals.

Public school systems are already producing graduates who have had some introduction to computers. The notion and function of data processing will be somewhat familiar to this generation of students; they will be comfortable with the concept of the computer as a daily companion. If nothing else, playing video games such as "Pac-Man" will provide an uncommon introduction to computers for many people.

There are also a number of short introductory courses available from private institutions or public colleges. While proprietary schools can produce a qualified entry-level programmer in a six-month period, the casual student can obtain an overview appreciation course in a one- or two-day seminar typically entitled "Introduction to Computers for Non-Computer People."

The rapidly growing computer retail outlets also offer new opportunities for learning. Some computer stores offer several hours of free instruction, while others provide training sessions for a small fee.

There are a number of options for the millions of people who have neither the opportunity nor the time for a serious and ongoing computer education program. One alternative is presented by an organization called Information Plus, located in Stirling, N.J. This company distributes, on a subscription basis, 35 issues of a biweekly, six-page bulletin called Computer Basics.

A particular subject is treated in each unit. One issue covers details of computer hardware, another describes how it works. Still others describe components of a system, some variations in computer operations and communications, the nature of programming and illustrations of data processing applications.

The format of Computer Basics helps to make it readable. Each unit treats one major subject and then introduces additional related concepts through example and illustration.

News about computer applications and developments is noted in brief paragraphs. A short quiz, with answers listed nearby, is on the final page of each issue so that readers can check their comprehension of the material.

The first issue, for example, begins with an introduction to the binary system and the development of data processing techniques.

This is accomplished by the use of an example that most Americans will recognize. It is the famous Revolutionary War incident in which Paul Revere's hastily shouted message was converted into code and transmitted by lantern light.

The computerization of the words "One if by land and two if by sea" provides the opportunity to demonstrate the use of Boolean logic in problem solving.

Facilitates Explanations

This example also facilitates explaining the use of decision tables and flowcharting techniques in problem formulation.

Using this familiar historical episode, the authors of Computer Basics have shown how a computer can be programmed to communicate the intelligence of troop movements.

The success of Computer Basics is based primarily on the ability of its authors to communicate in clear, readable sentences.

In addition, the length of each selection is carefully calculated to be adequate for the presentation of essential material but brief enough to avoid tedium or fatigue for the student.

Information Plus offers the Computer Basics series along with other publications that further better skills in such fundamentals as reading and writing.

This association further underscores the observation that computer literacy is a necessary component of life today.

Sooner than we think, every grammar school child will learn four "Rs" instead of three — reading, writing, 'rithmetic and reckoning.

Frank is executive vice-president of Informatics, Inc. in Woodland Hills, Calif.

HUMAN CONNECTION/Jack Stone‡

Working Overtime Without Pay: DP Martyrdom or Self-Flagellation?

This is Part 2 of a continuing series on how to succeed as a data center manager.

Can you imagine how wonderful life would be in the data center if management made an ever-so-slight adjustment in its operating policies — namely — arranged for the systems and programming staff to work regular hours?

I'm not really trying to be snide when I note that the vast majority of computer systems folks have never experienced the glow of living normal out-of-work hours after a normal nine to five workday.

Like having the time to play "kick the can" with the kids before it gets dark or competing with the other bridge freaks on Tuesday nights or fooling around with the photography kit or just plain gazing at the sunset.

Standard Working Conditions?

What's worse is that an awful lot of systems people — and systems managers — truly believe that frantic, gyrating, pressure-cooked, crazy hours are part of the standard working conditions in the DP shop.

They embrace the concept of the infinite workday and the omnipresent staff because there is, to their accounting, an immeasurable amount of work to be done.

I suppose one can understand their logic since they probably haven't experienced any other form of operation, but surely there are easier ways.

And it's discouraging to listen to how the beloved users feel about the working hours of DPers.

Ask any of them and I'll wager you'll get a response in this vein: "I'm really impressed with the stamina and motivation that computer people have. They are so willing to work however long is necessary — with great sacrifices in their personal lives. You'd never catch me working overtime, except in cases of clear emergencies."

So when Stephen Roberts, assistant director of the Catholic University of America Computer Center (CUA) in Washington, D.C., telephoned me several years ago and revealed that his center worked regular hours, I thought it was unique.

Having a familiarity with large-scale computer operations at university sites, I know that they are year 'round under the same management guns as commercial and government installations and are all pointed at more and better DP products, a good deal faster and a lot cheaper — which translates into the maniacal overtime of the typical data center.

During our conversation, Roberts expressed the heretical notion that the nutty hours of DPers were terribly unfair, if not ridiculous. "Why should we be killing ourselves for the users month after month, year after year, in unending overtime? We don't get extra pay for it, and there's no real appreciation for our extra efforts on the part of the users — or top management.

"Have we all forgotten that users had manual systems installed a long time before computers came on the scene and that they never did much overtime then? Now with machine support they still don't and that's because DPers are benevolent enough to do the overtime for them — and on a continuing basis.

"A surprisingly large number of systems people — and their leadership — suffer from a chronic case of technical masochism complicated by a touch of personal martyrdom. This is the result of their consuming desire to 'solve problems.'

"Of and in itself, the attitude is laudable. However, what happens is that center management and lead analysts are not — or cannot be — selective, and they accept virtually every problem that's thrown at them. They'll take on the legitimate systems work, to be sure, but rarely defer, delay or cancel the 'cats and dogs.'

"As a result, the systems staff works incredible hours, deeply believing in meeting the 'challenge,' as they call it. I call it 'self-flagellation.' "

Letters to Stone should be addressed to him at Box 270, 1377 K St. N.W., Washington, D.C. 20005.

LETTERS

Student Financial Aid

"Branscomb: Faculty Shortage Hurts Productivity" [CW, April 26] is not the first article describing the shortage of qualified faculty that has appeared in *Computerworld* and numerous other publications.

However, as I read each article I keep seeing the same reasons being given: lack of money for higher faculty salaries, higher salaries in industry, not enough money for research equipment and so on.

It is a known fact that fewer individuals are pursuing a doctorate, but I have not yet seen an article that addresses an issue that may be another, if not *the*, cause for individuals not obtaining a doctorate: inadequate financial support for the student.

With the pressures of our economy there are not many people who can commit three or more years of their lives to living at what might be considered a poverty level.

Unless an individual has a spouse who works and earns money to support the family or the individual is financially secure and does not have to worry, how can we expect people to live on the few thousand dollars a year they receive as assistants while in school?

The problem becomes even more severe for families with children or for individuals who already have a well-paying job and are considering leaving that job and returning to school.

Maybe more individuals would be interested if some of the money being given to schools were used to provide adequate living allowances for the individuals while they are in school. If schools can provide this kind of incentive then maybe more people would want to further their education.

I feel that I know what I am talking about because I am one of those people. To return to graduate school would impose a severe financial burden on my family and I am sure that I am only one of many.

If industry and education want more professors then they need to start making it financially possible for people to go to graduate school.

Richard Fleming
Data Processing
Program Coordinator
North Lake College
Irving, Texas

Proper Diet?

I was absolutely fascinated by "Researchers Trying to Grow Biocircuits" and "Scientist Explores Single-Molecule Microcircuit" [CW, April 19]. I was particularly interested in Dr. James H. McAlear's idea of a completely organic computer.

Just one question though: This thing will have to eat to stay operational. What'll you feed it?

Obsolescent field engineers may not be the right diet.

George Field
Director
Technical Communications Programs
Honeywell, Inc.
Waltham, Mass.

Cobol Compromise

I am generally in favor of the new Cobol-80 standard. I am, however, becoming increasingly concerned about the intransigence of the American National Standards Institute X3J4 subcommittee and its "take it or leave it" attitude.

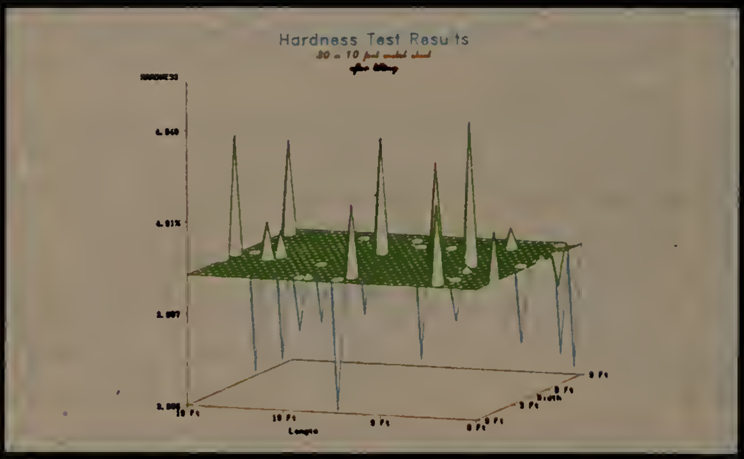
The public has spoken, and it is imperative that the committee react quickly to strike a compromise, lest the entire effort go down the tubes.

Consider, for example, the proposed extension permitting a 48 level table, in other words, 48 OCCURS clauses up from the present limit of three. Although this change will not impact existing programs, and hence is not the focus of the opposition, it is nevertheless absurd.

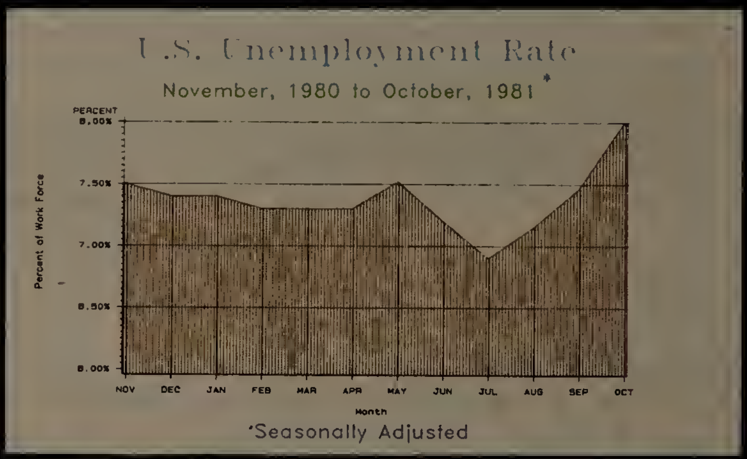
Assume that such a table is implemented and that each element occurs only two times. This would create a table of 2^{48} entries or approximately 1,000,000,000,000,000 items. If such a table were merely initialized at the rate of 1,000,000 items per second, it would take approximately 30 years. This estimate includes only CPU time and omits entirely the resources required to page the table in and out of memory.

Robert T. Grauer
Coral Springs, Fla.

SAS/GRAPH saves time on IBM 3279, Tektronix 4027, HP 7221, Zeta 1453...

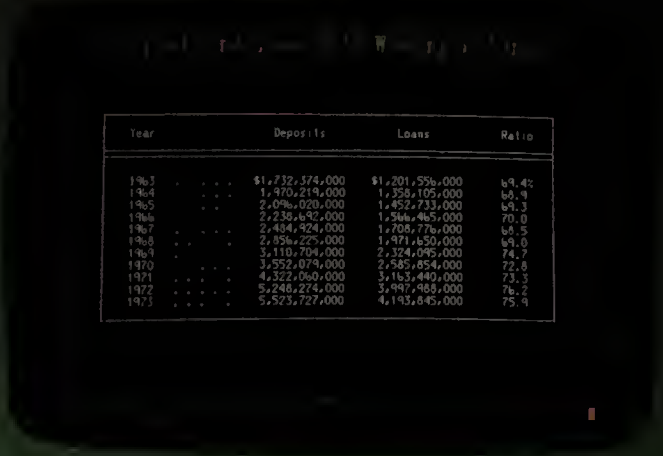


Zeta 1453



Hewlett-Packard 7221

and more.



Year	Deposits	Loans	Ratio
1963	$1,732,374,000	$1,201,556,000	69.4%
1964 . . .	1,970,219,000	1,358,105,000	68.9
1965 . .	2,096,020,000	1,452,733,000	69.3
1966	2,238,692,000	1,566,465,000	70.0
1967	2,484,924,000	1,708,776,000	68.5
1968 . . .	2,856,225,000	1,971,650,000	69.0
1969 .	3,110,704,000	2,324,095,000	74.7
1970 . . .	3,552,079,000	2,585,854,000	72.8
1971	4,322,060,000	3,163,440,000	73.3
1972	5,248,274,000	3,997,988,000	76.2
1973	5,523,727,000	4,193,845,000	75.9

IBM 3279

Tektronix 4027

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READER COMMENTARY/Julian S. Williams‡

Defining the Functions of Computer Specialists

In recent months, the computer press has published many articles and letters concerning the inadequate education of computer specialists. It is my contention that much of this controversy revolves around a misunderstanding of the functions of most specialists.

The standardization of career paths in the computer industry is long overdue. Many managers of companies and their data processing departments appear to have a misconception of the function of specialists.

If these functions were to be categorized and a nomenclature for these careers standardized, I believe that much of the dissatisfaction with the education system would be allayed.

This standardization would also help the universities, colleges and data processing schools tailor their programs to the real needs of the computer industry.

By using consistent titles for career paths, companies would avoid much of the dissatisfaction among computer specialists, be able to retain professionals longer and avoid hiring professionals in positions unsuitable to their educational background and long-term career goals.

Commission a Committee

In order to complete this process of standardization, I urge the industry to commission a committee of interested parties to continue the study of these ideas and publish a standard of nomenclature for career paths together with minimal trainee educational requirements.

I propose the following as a beginning classification. Note that this discussion is restricted to software functions and no classification is attempted for hardware functions.

- **Programmer** — Encoder.
- **Programmer/Analyst** — Business applications programmer/analyst.
- **Software Analyst** — "local" software implementation and maintenance, "local" software development.
- **Software Developer** — operating systems, language, productivity tool development, "general" software package development.
- **Scientific Programmer/Analyst** — Scientific applications programmer/analyst.

The two remaining designations, systems analyst and software engineer, already have a reasonably standard meaning.

The further subdivision of these career paths could easily be accomplished by adding a prefix, such as trainee, junior, lead or senior to indicate level; and data base, teleprocessing, telecommunications or network to indicate area of specialization.

Some care must then be taken over the managerial titles, since the systems manager should then be the manager of the systems analysis department, while the software manager would be the manager of the DP department.

The following definitions expand on the brief descriptions given above and suggest minimal trainee educational requirements.

Programmer: This should be reserved for the function of encoder — in other words, a person who translates a previously designed and completely specified solution into the syntax of a specified language.

This position would need a two-year associate's degree from a junior college or data processing school. However, it is to be expected that language generators will eventually eliminate this classification.

Programmer/Analyst: This function is intended to describe the applications analyst. This person would be required to interact closely with the end user, to specify and design the applications program and, if necessary, encode the solution into a suitable language.

The programmer/analyst should have good verbal and written communications skills together with a thorough knowledge of the applications area, such as a four-year degree in some applications area — for example, business — and a minor in DP or computer science.

Software Analyst: This function is intended to act as an interface/consultant between the computer operations department and the programmer/analyst. This person should have a thorough technical knowledge and some knowledge of the applications area.

Normally, this role would be filled by someone with an additional technical specialization, for example, data base management systems, teleprocessing or telecommunications, or network. This person would have a four-year degree in DP or computer science with an applications minor.

Software Developer: This function is intended to be the mainstay of the manufacturer's or software house's development department — in other words, the person involved in the development of general software packages, operating systems, lan-

(Continued on Page 66)

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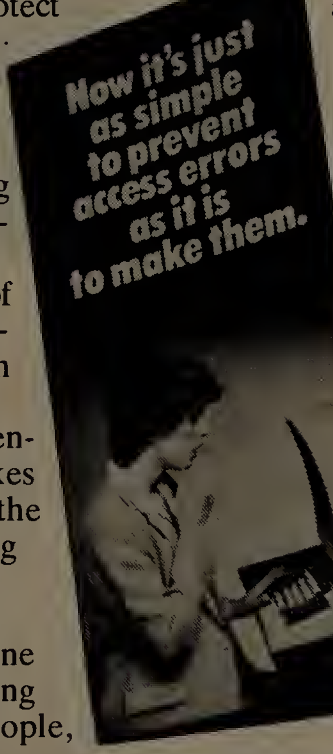
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LETTERS

Ease Restrictions on Hiring

I would like to comment on one aspect of the manpower shortage in the U.S. data processing industry. Almost every week *Computerworld* carries articles touching on this problem. Knowledgeable people refer to the shortage as "critical" and see it continuing into the 1990s.

If things are really as serious as these experts claim, why hasn't the industry approached the federal government to ease the restrictions of hiring skilled personnel from other countries? I am speaking of people seeking permanent residency in the U.S.

I am aware that some hiring is done here in Canada. However, the time and aggravation encountered by the companies and individuals involved has usually been extensive.

The local U.S. consulate spoke of an 18-month wait between the time a job offer is made and the time entry is granted to the individual. This unreasonable situation precludes most companies from even attempting to hire outside the U.S.

One way to reduce this hiring problem is to have certain areas of the DP industry, for example, programming and analysis, placed under Schedule A of the Department of Labor's application for Alien Employment Certification.

Occupations listed under Schedule A are recognized by the federal government as having a shortage of people to fill all the available positions. This permits a person to apply for permanent residency in the U.S., as opposed to the prospective employer having to serve as a sponsor on the person's behalf.

Employment is normally still required before a residency visa is issued. Minimum qualification standards are usually stipulated, such as a degree or experience. If there are fears of wages being adversely affected due to cheap labor, applications may be restricted to certain countries, for example, Canada and England. I doubt that placing the selected fields on Schedule A would initiate a mass migration to the U.S. People would move because of choice, not economic necessity, as we also have a shortage here.

My wife and I would like to move to Houston. Our wish to move south is not based on desperation. We have nice, well-paying positions. My wife is a programmer/analyst while I am a systems analyst. We both have degrees, plus more than five years of experience.

If there really is the shortage everyone speaks of, now may be the right time for the industry leaders to petition the federal government for a temporary change to Schedule A.

I also feel the primary responsibility for obtaining permanent residency should be our own, not a prospective employer's. These objectives would be accomplished if our occupations were listed on Schedule A.

Ian K. Blanchard
Calgary, Alberta

Redefining Specialists

(Continued from Page 65)

guage compilers and productivity tools.

This person should have a combination of theoretical knowledge and technical skills. He should have a traditional computer science major with a strong theoretical background.

Scientific Programmer/Analyst: This function is intended to describe the scientific applications analyst. This person should have a bachelor of science degree with strong mathematical content and a computer science minor.

Systems Analyst: This function is the traditional systems analyst function: to analyze work flow and design systems (not necessarily computerized) to optimize resource utilization. This person should have a traditional systems analysis degree (usually from a school of business), which includes both traditional and computerized work flow management.

Software Engineer: This function is intended to describe the interface between the manufacturer or software house and the computer operations department. This person would aid in the implementation and maintenance of software packages in the specific environment of the operations department.

The software engineer could come from a number of backgrounds (programmer, software analyst, software developer), but must have extensive in-house training, be able to communicate well verbally and have a willingness to travel.

These ideas are only intended as a starting point for discussion. I want to encourage the standardization of career functions in the hope that some of the controversy concerning the education of computer professionals will be resolved.

For example, under this scheme, the DP department of an insurance company looking for a trainee "applications programmer" would know to advertise for a trainee programmer/analyst with a four-year degree from a university school of business with a strong minor in computer science (or DP). This would avoid hiring a theoretical computer science major who would probably leave after six months.

Williams is associate professor of mathematics and computer science at Adelphi University in Garden City, N.Y.

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Cincom Updates 'Series 80 Mantis,' 'MRPS'

CINCINNATI — Cincom Systems, Inc. has revamped its Series 80 Mantis application development package and its Manufacturing Resource Planning System (MRPS).

The vendor also announced versions of MRPS for Digital Equipment Corp.'s VAX-11 line of 32-bit minicomputers running under VMS and of its Total data base management system (DBMS) for Data General Corp.'s Eclipse Information Systems running under AOS.

Release 3.0 of Series 80 Mantis features Logical DBMS view, import/export reorganization utility, attribute modification, printer support, pseudoconversational CICS and support for Vtam environments under Cincom's Environ/1 on-line control monitor.

The enhanced version of Series 80 Mantis reportedly enables users to access Series 80 Total files on-line and to perform revisions using only four Mantis commands and their options.

The OS/DOS version of Series 80 Mantis for OS/DOS Mantis for E/1 users, with support for up to eight CRTs, may be purchased for $30,000 with an additional $2,500 installation fee and $4,500 for annual usage. OS/DOS Mantis for CICS users, also with support for up to eight CRTs, is available for $40,000 plus $2,500 for installation and $6,000 for annual usage. Logical DBMS view is available for $8,000 plus $750 installation and $1,200 annual usage.

Cincom has expanded the on-line version of its MRPS package with the addition of real-time processing capabilities that are intended to more than double the processing power of the package's on-line facility, which already includes on-line data entry and on-line query.

On-line MRPS reportedly is designed to use Cincom's on-line control monitor, Series 80 Environ/1 or IBM's CICS. Environ/1 is said to provide the user with task-level recovery, full restart and reprocessing capabilities. Using CICS, the user can back out from the last transaction with dynamic transaction backout and rekey only the information that was being processed at the point of failure.

Available on the IBM 370, 3031, 3032, 3033 and 4300 mainframes or on DEC VAX superminis, MRPS is priced at $5,000.

The initial implementation of MRPS on the VAX reportedly is built around Minicomputer Total and operates in an on-line real-time mode using the native facilities of the host operating system.

Its components include the foundation module, the manufacturing material planning system and the master production scheduling system. Among the interactive processing features included are real-time capabilities for bill of material, inventory control and orders and requirements control.

Planning also can be accomplished through background type processing using the foundation and planning modules, the vendor said. DEC's Forms Management System (FMS) also is said to be a key component of the system.

MRPS for the minicomputer environment currently is operational on both the VAX-11/750 and the VAX-11/780 running under VMS. Cincom's Minicomputer Total and DEC's FMS are required for using MRPS, which is priced at $52,000.

Cincom also announced that its Total DBMS now is operational on Data General Corp.'s commercial Eclipse systems operating under AOS. Total reportedly has been re-architected for use on the Eclipse and is compatible with all versions of Total. Total is available for the DG Eclipse for $24,600 for purchase with an additional $2,000 installation fee.

Cincom is based at 2300 Montana Ave., Cincinnati, Ohio 45211.

Cincom Users Get Maintenance System

CINCINNATI — An Advanced Program Maintenance System (APMS) has been unveiled by Cincom Systems, Inc. to enable users of its products to receive product corrections and manual updates on machine-readable patches.

APMS reportedly is available for all IBM and plug-compatible mainframes running under DOS/VS, DOS/VSE, VS1, VS2 and MVS operating systems. Special programs are supplied to customers who have Cincom's Environ/1 data communications monitor for updating the E/1 on-line program data set.

The primary component of APMS is Cincom's Assistance Request Data Base, a total data base containing the assistance request data processed over the past several years, the vendor said. The magnetic tape for the machine-readable patches is created from this data base, along with a cumulative printed listing of the Product Assistance Newsletters (PAN) that have been distributed, a Cincom spokesman said.

The customer receives magnetic tape containing the machine-readable patches, a printed and microfiche listing of PAN, three programs designed to perform the various functions necessary to install and use the system and a manual that explains the installation process and items such as what the record layouts look like.

The APMS is available at no additional charge to current Cincom customers, the vendor said from 2300 Montana Ave., Cincinnati, Ohio 45211.

Expands System Audits

Release 2.0 Added to 'CA-Jasper/JA'

JERICHO, N.Y. — Computer Associates International, Inc. has unveiled Release 2.0 of its CA-Jasper/JA system performance monitor for IBM and plug-compatible systems under OS/VS1 and MVS.

Release 2.0 was designed to improve hardware and software productivity by monitoring and measuring system performance. It reportedly expands the scope of system audits, providing daily, weekly, monthly and yearly reporting of all hardware and software activity of OS/VS1 and MVS.

CA-Jasper/JA provides active time analysis, abend analysis, resource use accounting, billing facilities, comprehensive management reporting, TSO, VM and System Management Facilities (SMF) accounting and an interface to IBM's CICS Performance Analyzer, the vendor explained.

The CICS Performance Analyzer interface is said to allow CICS data to be combined with VM/TSO and batch SMF data for the first time and to provide system and user accounting. CA-Jasper/JA's "Wizard" report generator was designed to deliver customized reporting of any desired analytical data on a dynamic basis.

The CA-Jasper/JA package is priced at $7,500 for a three-year lease, with other lease plans also available for OS/VS1 and MVS users, the vendor said from 125 Jericho Tnpk., Jericho, N.Y. 11753.

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Running in VM/CMS

'VMtape' Out for IBM Mainframes

FALLS CHURCH, Va. — VM Software, Inc. has announced versions of its VMtape tape management package for IBM and plug-compatible mainframes running in the VM/CMS environment and based on IBM VM/370 and VM/SP operating systems.

VMtape for VM/CMS systems reportedly provides standard label and nonlabeled tape support, password and expiration data protection, tape drive and tape volume management and full data set control within the CMS subsystem environment. A full audit data base is said to be maintained.

VMtape was designed to be installed with no modifications to the VM system, according to a vendor spokesman.

A permanent license for the VM/CMS version of VMtape on IBM 4341 Model Group 1 and smaller systems costs $3,995. The software for larger IBM and plug-compatible CPUs is licensed for $8,500, according to the vendor.

The initial version of VMtape for IBM VM/370 and VM/SP environments was directed to the installation that had VM and either OS/VS1 or MVS and desired a single-installation tape library and tape management catalog, the vendor said.

Since VMtape uses the tape librarian functions of OS/VS, no separate tape librarian is needed for VM, according to VM Software, which also claimed that the interface provides tape security, auditability and operational control not previously available in IBM's VM environment, the vendor said.

A permanent license for the VM/370 and VM/SP versions of VMtape for IBM 4341 Model Group 1 and smaller systems is available for $3,995. Licenses for larger CPUs are priced at $8,500. An 80% conversion credit is available for upgrading a VMtape license.

VM Software can be reached at P.O. Box 985, Vienna, Va. 22180.

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'A/P Plus' Update Minimizes Input At Invoice Time

NEEDHAM HEIGHTS, Mass. — McCormack & Dodge Corp. has announced Version 1.1 On-Line, an enhancement to its A/P Plus accounts payable package, which reportedly allows users to minimize entry input at invoice time.

Version 1.1 also offers protection for previously coded input through screen exception and skeletal vouchers. It also offers users on-line vendor inquiry and real-time mode features, the vendor said.

A/P Plus is written in Ansi Cobol and is compatible with IBM mainframes and System/34, Hewlett-Packard Co.'s HP 3000 processor, Honeywell, Inc.'s 6000 series processors and Burroughs Corp.'s B2500 through B4800 systems, the vendor said.

A/P Plus costs $31,500, the vendor said from 560 Hillside Ave. Needham Heights, Mass. 02194.

DOS, OS Users Get New 'Csar'

ATLANTA — Software Concepts, Inc. has announced that an enhanced version of its Computer Scheduling and Reporting package (Csar) is available for users of IBM's DOS/VS(E) and OS-based mainframes.

Release 1.3 of Csar is said to interface with IBM's CICS for extended on-line inquiry abilities, production schedule tracking and automatic job submission.

The package also interfaces with Applied Data Research, Inc.'s Librarian, IBM's Interactive Computing and Control Facilities and CMS, Pansophic System, Inc.'s Panvalet, Duquesne System, Inc.'s SPM and National CSS, Inc.'s On-Line Without Limits, the vendor said.

Csar for DOS users sells for $9,900; for OS users, $18,000. A 30-day free trial is available along with two days of training in Atlanta.

Software Concepts, Inc. is located at 1450 Atlanta Center, 250 Piedmont Ave., N.E., Atlanta, Ga. 30308.

Reservation System Debuts for Series/1

SAN FRANCISCO — An air cargo reservation system has been developed for the IBM Series/1 by Raymond G. Lorber, Inc.

The Japan Air Lines Cargo Reservation System (Jalcars) reportedly allows users to reserve cargo-using space and weight factors as well as flight segment and container availability from origin to final destination.

The on-line, interactive Series/1 EDX-based system directly interfaces with Japan Air Lines' teletype network providing CRT terminal query of booking and flight status information.

The software costs $35,000, with volume discounts available for installations with more than one CPU from Suite 2840, 333 Market St., San Francisco, Calif. 94105.

Interface to MVS/SP Version 1.3

'Super-MSI, MSM, GCD' Updated

MARLBORO, N.J. — CGA Software Products Group, Inc. has released new versions of its Super-MSI, MSM and GCD utility packages, which feature an interface to IBM's MVS/SP Version 1.3 operating system.

The packages can be purchased separately or together as the Transparent Single System Image (TSSI) for IBM and plug-compatible systems users. They operate in multiple systems environments running under OS/MVS, MVS-SE, SVS, MVT, VS1 and MFT.

The new versions include enhancements to use the new features of the MVS/SP Version 1.3 operating system effectively, the vendor explained. The enhancements are said to be specifically tailored to this operating environment to maximize its efficiency.

According to the vendor, the new versions of Super-MSI, MSM and GCD allow installations with both MVS/SP and non-MVS/SP systems to maintain their compatibility in a single system image, without the expense of channel-to-channel adaptors.

No modification of the systems or software is required, the vendor said.

The TSSI package is available on an annual lease basis for $1,375/mo. Priced separately, an annual lease for Super-MSI is available for $625/mo, and MSM and GCD are available for $450/mo.

CGA is located at Cannon Hill Farm, 255 Rt. 520 E., Marlboro, N.J. 07746.

IBM Users Get'Credicheck'

ATLANTA — Magnum Communications, Ltd. has announced Credicheck, a software package that is said to enable users of IBM 370 series, 3033 or 4300 systems to access up to five credit bureaus.

Designed for firms that extend credit, the Credicheck package can process computer-to-computer requests for credit reports. Communications with individual bureaus can be handled via dial-up lines with asynchronous communications or leased lines using binary synchronous communications, the vendor said.

The package operates as part of a credit management system or as an aid for loan processing. It costs between $5,500 and $10,000, depending on features selected, the vendor said from 320 Interstate N., Atlanta, Ga. 30339.

Financial Package Fits System/34

DALLAS — CTI Limited, Inc. has announced Action, a financial package designed for IBM's System/34.

The package includes accounts receivable, accounts payable, billing, general ledger, payroll, job cost, retainage, fixed assets and floating prime modules, the vendor said.

Each application costs $1,000 including source code, installation and user documentation, the vendor said from Suite 810, 4455 JBJ Freeway, Dallas, Texas 75234.

IBM 4300 Users Get 'Lawpack'

NEW YORK — Compinfo, Inc. has announced Lawpack, a financial accounting package for law firms using an IBM 4300 series processor.

Developed and implemented at Skadden, Arps, Slate, Meagher & Flom, a 280-attorney firm with four offices, the package includes time recording, internal charges, vouchers payable, employee expenses, billing/accounts receivable, work in progress and cash receipts.

Lawpack is an interactive package written in Cobol, using IBM's Vsam and CICS. It ranges in price from $80,000 to $250,000, depending on selected features, the vendor said from 1860 Broadway, New York, N.Y. 10023.

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These are some of the reasons Rubbermaid's new CleatStat™ mats are fast becoming a valuable part of offices where static-sensitive electronic equipment is used.

Designed to be used on carpeted surfaces where static electricity builds up, CleatStat mats feature "cleats" that grip into carpeting and hold the mat in place.

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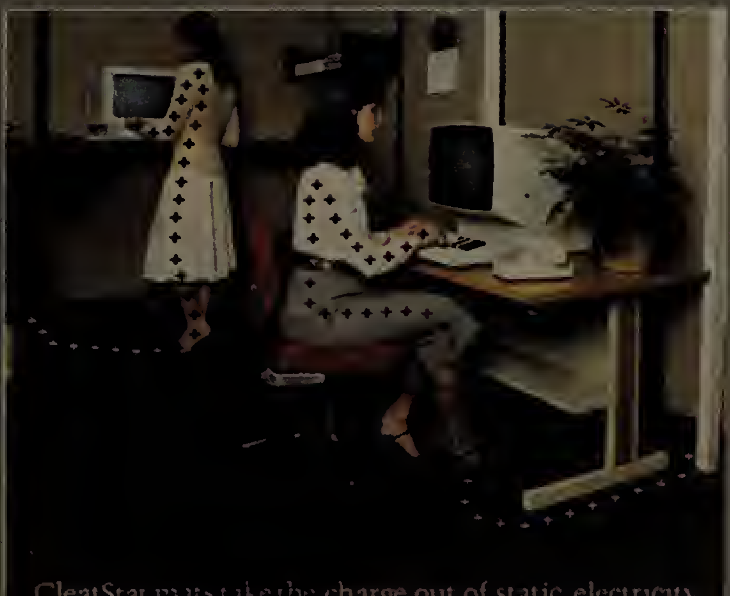
Operators must wear shoes soled with leather or other conductive materials, and only chairs with rubber or plastic casters should be used on the mat.



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Graphics Capabilities Available For Users of VAX-11, PDP-11

TULSA, Okla. — A software package designed to add graphics display capabilities to software programs operating on Digital Equipment Corp. VAX-11 and PDP-11 systems under the VMS, RSX-11M and RT-11 operating systems is available from Viking Software Systems.

The Viking Graphics System (VGS) was designed to provide programmers with a library of Fortran subroutines to generate graphics displays on any DEC VT100 or compatible terminals, the vendor said.

Features are said to include a variety of display formats including exponential curves, graphs with multiple lines and polynomial curves, standardized formats and screen resolution of 100 vertical units and 50 or 100 horizontal units, depending on screen size. Hard copy is available when the VT100 has the serial printer interface option — VT-1XX-AC — connected to a printer that supports VT100 graphics characters, such as DEC's Writer IV Graphic Printer.

VGS is said not to require special hardware or software additions.

The license fee for the VGS is $500, including a one-year warranty and unconditional 30-day trial.

VGS is available from Viking Software Systems, Suite 820, 2800 Center Building, 2815 E. Skelly Drive, Tulsa, Okla. 74105.

Cost of Generators For DEC Processors Cut

CORAOPOLIS, Pa. — Information and Systems Research, Inc. has announced price reductions on its Rims/MPG line of application program generators for Digital Equipment Corp. processors.

Price reductions range between 11% and 14%. Examples of the price reductions include RT-11 Dibol/DBL, which used to cost $7,500 and now costs $5,000; RSTS/E Dibol/DBL, which used to cost $11,250 and now costs $7,500; and RSTS/E Basic or Basic Plus, previously priced at $11,250, are now priced at $10,000.

The vendor is located at Airport Office Park, Building One, 410 Rouser Road, Coraopolis, Pa. 15108.

VAX-11 Gets Accounting Software

LUBBOCK, Texas — Compu-Share, Inc. has announced interactive accounting software designed for the Digital Equipment Corp. VAX family of computers.

The packages include a general ledger and financial reporting system, accounts receivable, accounts payable and payroll. All packages include a user-controlled security system limiting access to various menu selections.

The applications are said to feature a multiuser input environment for multiple terminal operations. Automatic restart capability in system crashes reportedly takes the user back to the point he was at without loss of input data.

License fees start at $5,500 from 3824-50th, Lubbock, Texas 79413.

Schools Offered Free DBMS

CAMBRIDGE, Mass. — Colleges and universities can get Software House, Inc.'s System 1022 data base management system (DBMS) free if they act quickly. The DBMS runs on Digital Equipment Corp.'s Decsystem-10 and Decsystem-20.

Software House is offering the System 1022 and free maintenance to the first 25 schools that respond to its offer. To qualify, a school must be a nonprofit, tax-exempt college or university and restrict the DBMS' use to teaching, demonstration and nonsponsored research projects.

The offer expires June 15. More information is available from Lynda Jones, Software House, 1105 Massachusetts Ave., Cambridge, Mass. 02138.

Xoren Releases 'IPL-11' in U.S.

LONDON — Xoren Computing Ltd. has released in the U.S. a software package for the transfer of files between any two Digital Equipment Corp. PDP-11 or LSI-11 computers or VAX-11 superminis.

The Xoren IPL-11 is said to allow computers running different operating systems to be linked. Versions are available for most DEC operating systems, the vendor said.

The package includes full communications error checking and allows a two-way communications system. File transfers can be initiated manually or by a user's application program and may be controlled and monitored from either computer. Transfers can take place in both directions simultaneously at line speeds up to 9,600 bit/sec., the vendor said.

The package is supplied under a five-year license. A separate license is required for each combination of CPU and operating system under which IPL-11 is to run, the vendor explained. The two licenses required to link two operating systems cost $1,350 each, whichever pair of operating systems is specified.

Xoren Computing Ltd. is located at 28 Maddox St., London W1R 9PF, England.

VAX-11, PDP-11 Gain File Transfer Package

LONDON, Ont. — Cableshare Inc. has introduced Portal-MVS, a software package designed for file transfer between two Digital Equipment Corp. VAX-11 superminis, two DEC PDP-11 minicomputers or a combination of a VAX-11 and a PDP-11.

Portal performs interactive and automatic file transfers between VMS, RSTS/E and RSX-11M operating systems. It may also be used in conjunction with the vendor's LSI-X.25 interfaces to provide file transfers over private and public packet-switched networks, a vendor spokesman said.

The package for the VAX-11 costs $4,500 and the package for the PDP-11 costs $2,500. Both packages are necessary to transfer files from a VAX-11 to a PDP-11 — only one is necessary if the transfer is between like systems. More information can be obtained by contacting Cableshare, P.O. Box 5880, 20 Enterprise Drive, London, Ont., Canada N6A 4L6.

PE 3600 Gets File Manager Package

NORWALK, Conn. — A software package designed exclusively for file management on the Perkin-Elmer Corp. Model 3600 Data Station has been released here.

The DMS/200 software performs most general record-keeping activity required by analytical laboratories, the vendor said. Typical files managed by this software include records of exposure to toxic substances, periodic test results, histories of maintenance activity for capital equipment, records of customers, inventory, chemical formulations, mailing lists, laboratory notebooks and customer complaints.

Each DMS/200 record can hold up to 256K bytes and files can be linked. The system can also be expanded; a single formatted data disk is capable of storing 400 to 800 records and additional disks can be added, the vendor said.

The system costs $1,970 from PE, Main Ave., Norwalk, Conn. 06856.

'Marsplus' Enhanced

CUPERTINO, Calif. — Tymshare, Inc. has added a client profile feature to its Marsplus airline reservation system.

Marsplus can now be used to display information about a client, including seating preferences and billing addresses, the vendor said. The information remains under the travel agent's control.

Marsplus is a computing service and is billed on an as-used basis, the vendor said from 20705 Valley Green Drive, Cupertino, Calif. 95014.

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Altos, the multi-user networking and communications company, lets you enjoy a more profitable yield. Now you can effectively accommodate up to 8 users, with true multi-tasking, on your microcomputer system and get 16-bit 8086 multi-user performance and features at an 8-bit system price.

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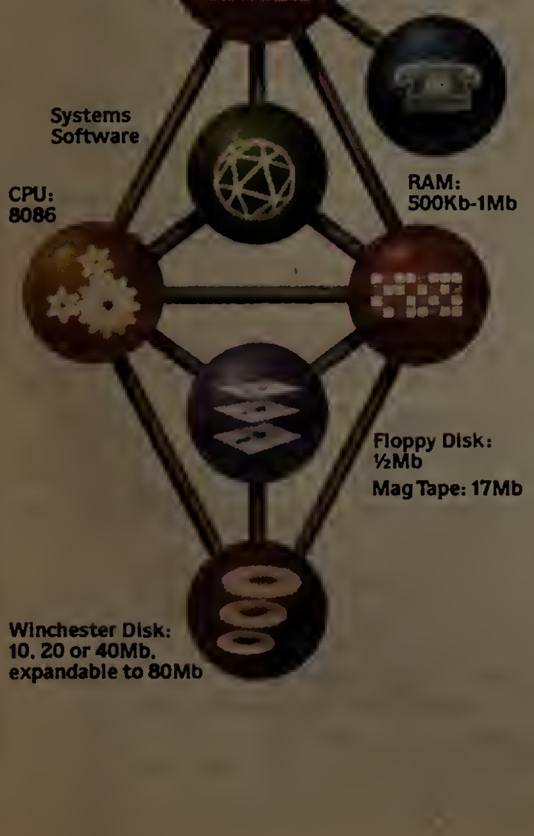

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Expanded 'Stock-Master' Runs on DG Nova, Eclipse

COSTA MESA, Calif. — Applied Business Systems (ABS) has released an expanded version of its Stock-Master interactive inventory management package to run on Data General Corp.'s Nova and Eclipse minicomputer series under Rdos or AOS operating systems.

Revision 2.1 of Stock-Master includes stock status reports and a reorder level calculation program, according to the vendor, and can be used as an independent stand-alone system. It can also be integrated with ABS' order entry/billing/sales analysis package, purchasing package (Purchase-Master) or used in conjunction with its Bill of Material Processor/Material Requirement(s) Planning module to form the basis of ABS' production control system, Production-Master.

Six major Stock-Master subsystems are master file maintenance, transaction entry, editing and file maintenance, stock status reporting, transaction detail activity analysis and reporting, purchase order line-item detail tracking and installation.

The Revision 2.1 is priced at $2,500/single-CPU installation with documentation and source code included in the price. An optional annual support contract is available for $300.

ABS is located at 4350 Upper Soda Road, Dunsmuir, Calif. 96025.

'Fimod/Cobol' Gets Upgrade

RICHMOND, Calif. — MDS Soft Pro Systems, Inc. has announced Version 2 of its Fimod/Cobol package designed for users of Wang Laboratories, Inc. VS series processors.

The financial modeling package includes all the features of Version 1, plus a feature to insert or delete a column or row and several special operator commands including a SUM command, MIN command, MAX command and AVERAGE command.

Fimod/Cobol Version 2 costs $1,250/CPU, MDS Soft Pro said from 4121 MacDonald Ave., Richmond, Calif. 94805.

'Wylbur' Gains Language Tools, TSO Capabilities

SAN FRANCISCO — Multilingual and TSO command capabilities have been added to its Wylbur programmer productivity tool by On-Line Business Systems, Inc.

Wylbur runs on IBM and plug-compatible mainframes using OS, MVT, VS1, VS2, SVS, MVS and CMS operating environments.

The enhancements to Wylbur reportedly enable users of Wylbur to enter the French-language equivalents of all major Wylbur commands. In addition, they make it possible for users to substitute the commands of IBM's TSO for similar Wylbur functions, thereby eliminating the need for retraining users who already are familiar with TSO.

Both the multilingual support and compatibility with TSO commands are available immediately, at no charge, to current Wylbur users.

On-Line Business Systems is located at 115 Sansome St., San Francisco, Calif. 94104.

'Apex IV' Aids Planning Efforts

MINNEAPOLIS — Control Data Corp. has enhanced its mathematical optimization system, which is said to improve user productivity and to reduce the cost of building and analyzing operations planning models.

The Apex IV program, which is available through CDC's Cybernet data services time-sharing network and its computer systems organizations, can serve as a planning tool for government, business and industry, according to a company spokesman.

Apex IV enhancements are said to include interactive access, which allows models to be entered in batch mode and then accessed interactively; automatic reformulation, where Apex IV's Presolve capability ensures efficient model; and data structure prior to optimization and interactive analysis, where interactive perusal of both the matrix and output files are said to allow users to obtain selected information on the model and solution.

The cost of using the Apex IV depends on the size and complexity of the task involved, the spokesman said.

CDC can be reached through Box 0, Minneapolis, Minn. 55440.

'Seamsys' Automates Mineral Evaluations

MINNEAPOLIS — Control Data Corp. has announced a series of software programs that are said to automate the tasks associated with evaluating large mineral deposits. Seamsys operates on all CDC Cyber 170 series computers.

Seamsys collects and analyzes drill-hole data, develops models of the property for graphics display in cross-section and plan view and provides reports on geologic reserves.

Seamsys can be licensed for $180,000 or leased for $4,200/mo from CDC, 8100 34th Ave. S., Box O, Minneapolis, Minn. 55440.

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HP 3000-Compatible 'Edict' Provides Documentation

AURORA, Colo. — Gesink & Associates has released an internal documentation package called the Easy Documentation & Integrated Program Control Technique (Edict) for Hewlett-Packard Co. HP 3000 computers.

Edict is said to provide information for the maintenance of existing Cobol programs. It also serves as a programmer training and software quality-assurance tool by providing programmers with consistent, objective measures of program quality, a vendor spokesman said.

Features include a cross-reference facility that shows all programs that reference a given record, program structure diagrams and the ability to rewrite programs with proper indentation.

The package is available for $1,200 for a one-year lease from Gesink & Associates, 2677 S. Macon Court, Aurora, Colo. 80014.

'Track' Details Audit Trail Of Software Development

ANN ARBOR, Mich. — A management and control tool for software systems development that provides a detailed audit trail of software changes has been released here by National Systems, Inc.

Track is suitable for use on both minicomputers and mainframes, according to the vendor. It has reporting and control capabilities similar to the support of a data dictionary system, but is especially tailored for software developers. Track has the ability to issue automatic configuration management development and maintenance personnel for design and implementation tasks, the vendor said.

Track reportedly allows users to organize and structure software systems without imposing a knowledge of the structure on all developers.

It automatically prevents naming inconsistencies within a release and among various versions, so software standards and control are maintained, the vendor said. It also is said to automatically enforce access restrictions and conventions for software security and reliability.

Track costs $35,000 from National Systems, 320 N. Main St., P.O. Box 7751, Ann Arbor, Mich. 48107.

Tape Cataloger Fits HP 3000

SARATOGA, Calif. — An automatic magnetic tape cataloging package designed to run on Hewlett-Packard Co.'s HP 3000 is available from Northampton Enterprises, Inc.

The MTM3000 package performs cross referencing and logging and signals the user when a tape volume number needs to be mounted or dismounted, the vendor said.

The MTM3000 is said to provide tools for automatically scratching tapes and visibility of when files were created and last accessed. Tapes are stored in volume identification order, requiring less storage space, the vendor said.

The MTM3000 is $2,700 for one unit. Additional units are $500 each and can be obtained from Northampton Enterprises, 19792 Northampton Drive, Saratoga, Calif. 95070.

Harfax Offers Tape Leasing

CAMBRIDGE, Mass. — Harfax Database Publishing, a service of Harper & Row, Publishers, Inc., has announced a tape leasing program for its Industry Data Sources data base.

The bibliographic data base contains approximately 20,000 records describing sources of statistical or directory information for 65 industries. Each record contains a complete bibliographic citation including author, title, publisher, publication date, pages and price, the vendor said.

The tapes are leased for $3,000/year including a master tape of 20,000 records and 11 updates of approximately 2,000 new records/mo. The vendor is located at 54 Church St., P.O. Box 281, Cambridge, Mass. 02138.

Enhanced 'ULA' Bows For IBM System/34

LITTLE ROCK, Ark. — Arkansas Systems, Inc. has introduced an enhanced version of its User Library Analysis (ULA) package for the IBM System/34.

The ULA provides a directory analysis of all libraries on disk, a company spokesman said.

The enhanced version includes a Library Responsibility Log, which is used to maintain information on all libraries, archive date, creation date and other information for responsibility accounting, according to a spokesman.

The enhanced ULA is priced at $95 from Arkansas Systems, Suite 202, 8901 Kanis Road, Little Rock, Ark. 72205.

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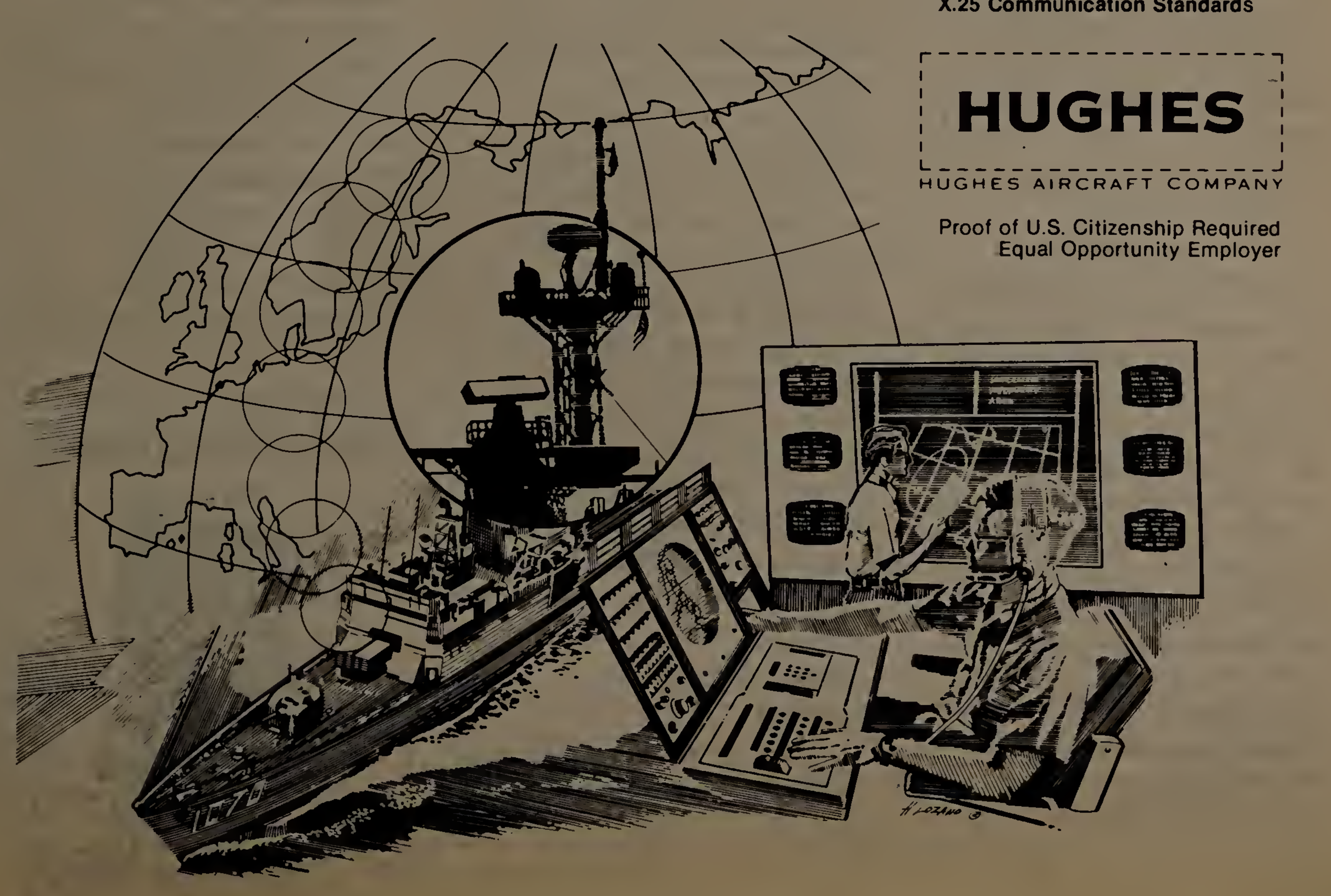

Library Search Out for System/34

SAN RAFAEL, Calif. — An interactive library member search and replace utility for the IBM System/34 has been announced by Greg Dinger & Associates.

Search/34 reportedly allows the user to locate and optionally replace specified character strings. The user can select a specific source or procedure member, a group of members or all library members, according to a vendor spokesman.

The results of such processing may be printed and/or displayed on the IBM 5251 display station, the spokesman said. Search/34 carries a one-time license fee of $350/CPU. The firm is located at 126 Alto St., San Rafael, Calif. 94901.

Timberline Adds Module

BEAVERTON, Ore. — Timberline Systems, Inc. here introduced a software module for its Management Accounting for Construction package. The module, called Equipment Cost, was designed for heavy construction firms or other users of equipment which is costed out, depreciated and scheduled for maintenance.

The system is said to allow users to automatically accumulate costs accrued, revenue attained and miles or hours used for each piece of equipment. It also captures costs by 15 breakdowns, records downtime and allows for multiple rental rates.

The module costs $4,200 from Timberline Systems, 10550 S.W. Allen Blvd., Beaverton, Ore. 97005.

Micro Notes

Ithaca Intersystems, Inc. has released **Version 1.0** of its **Intercomp** source compare utility software program. Intercomp runs under Digital Research, Inc. CP/M on Intel Corp. Z80-based machines. The software costs $295 from the firm at P.O. Box 91, Ithaca, N.Y. 14850.

A **family of interface modules** from CompuMate Corp. reportedly will enable the Atari 800 and 400 personal computers to accomplish additional personal and business applications. The CM-1000 printer interface costs $289. The CM-1000/V, including the CM-1000 printer interface and an 80-col video display generator, costs $489. A CM-10/V kit to upgrade the CM-1000 to CM-1000/V costs $225 from 6305 Arizona Ave., Los Angeles, Calif. 90045.

Business & Professional Software, Inc.'s (BPS) Screen Director software is said to allow an Apple Computer, Inc. Apple desktop computer to function "like a slide projector with a carousel," according to a spokesman. While the firm's complementary Apple Business Graphics software (marketed by Apple Computer, Inc.) allows the user to create and store graphics images, Screen Director retrieves and displays them on video monitors for presentation. Screen Director costs $150 for the Apple II and $250 for the Apple III, available from authorized Apple distributors and dealers. BPS is located at 143 Binney St., Cambridge, Mass. 02142.

A math calculating program that reportedly can compute formulas within formulas is available through Software Distributors, Inc. Developed by International Software Marketing, Inc., **Mathemagic** is said to feature such built-in functions as trigonometric, logs and conversions. The software costs $99.95 from Software Distributors at 9929 W. Jefferson Blvd., Culver City, Calif. 90230.

Time Manager, a time-saving tool for organizing daily schedules, summarizing and displaying appointments, to-do tasks and project information, is available from Radio Shack for $99.95. Time Manager runs under Radio Shack's 48K-byte two-disk TRS-80 Model I or Model III desktop computers.

Quickcode, a program generator for Digital Research, Inc.'s CP/M-based dBase-II data base management system, is available from Fox and Geller Associates, Inc. The product can be used to generate programs from mailing labels to major accounting functions. Data can be transferred from dBase to Callan Data Systems, Inc.'s Wordstar/Mailmerge word processor. Quickcode costs $295 with quantity discounts available. Fox and Geller can be reached through P.O. Box 1053, Teaneck, N.J. 07666.

Information Unlimited Software, Inc. (IUS) has released a second version of its **Datadex** data base manager to run under Apple Computer, Inc.'s Apple II computers with Corvus Systems, Inc. 5M-, 10M- or 20M-byte hard disk. Price for the Datadex configured for floppies is $150; the Apple II version is $300. IUS is located at 281 Arlington Ave., Berkeley, Calif. 94707.

Cosmos, Inc. has developed a software interface, the **Relational Network (R/Net)**, said to allow an IBM Personal Computer to connect either directly or remotely to minicomputers running under Microdata Corp.'s Pick operating system and supporting the Applied Digital Data Systems, Inc.'s Adds terminal. The R/Net costs $200.

Micro Associates, Inc. has announced a job scheduling and allocation package called **Proshed**. The package operates under the Digital Research, Inc. CP/M operating system and was designed for engineering and construction companies. The package can handle up to 100 projects on an 8-in. double-density diskette and each project can contain up to 200 activities. The package costs $250, the vendor said from 2300 Highway 365, Box 131, Netherland, Texas 77627.

Phase One Systems, Inc. has announced that its **Oasis** operating system is now supported on the National Semiconductor Corp. 6600 microprocessor. The operating system is available through National Semiconductor dealers and costs $500 for a single user and $850 for a multiuser version. Phase One Systems is located at Suite 830, 7700 Edgewater Drive, Oakland, Calif. 94621.

Vector Graphic, Inc. has announced a data communications package that allows Vector microcomputers to communicate with other Vector systems. The package also allows users of Vector microcomputers to communicate with larger minicomputers and mainframes as well as time-sharing services and electronic mail systems, the vendor said. The package, called **Conect**, costs $150, the vendor said from 500 N. Ventu Park Road, Thousand Oaks, Calif. 91320.

Ticom Systems, Inc. has announced **WP/DMS**, a combination word processing, data entry, data management, remote communications and mathematical calculations package for IBM's Personal Computer; Xerox Corp.'s 820; Radio Shack's TRS-80 Model 2; Apple Computer, Inc.'s Apple III; and all microcomputers produced by Texas Instruments, Inc. The package costs $495, the vendor said from Suite 200, 6090 Sepulveda Blvd., Culver City, Calif. 90230.

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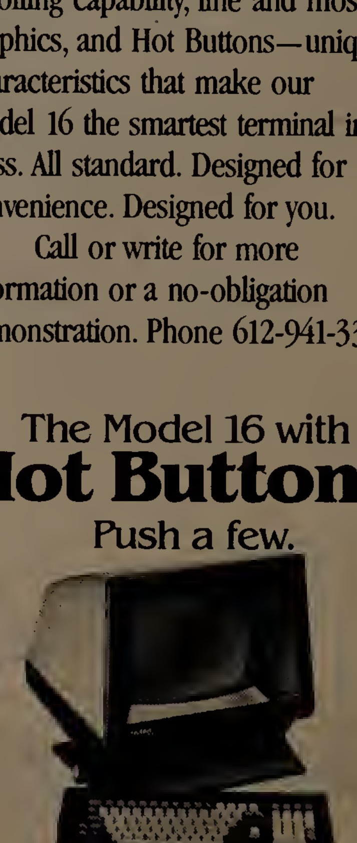

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SOFTWARE PIRACY

BY HARVEY GILBERT AND JONATHAN JOSEPH

Envision the following scenarios:

One: Company X, a software vendor, employs a skilled programmer to help develop a novel software product. The product is developed after considerable time and expense, and the marketplace greets it with much enthusiasm. Meanwhile, the programmer notifies Company X that he is resigning to take a better paying position at Company Z, a competitor located several miles down the road. Thereafter, Company Z very rapidly develops software that is functionally identical to the product marketed by Company X — but sells at a lower price.

Two: Company A, a software vendor, provides Company B with a nontransferable license to use its software for internal use only. Subsequently, Company A discovers that Company C is marketing an amazingly similar software product at a lower price. Investigation reveals that Company C thought it owned the software, since it had "purchased" from Company B a copy of the software containing no proprietary notices.

The above scenarios are typical of the numerous incidents of software piracy occurring in the computer industry today. In both cases, the companies could have taken relatively inexpensive steps to prevent or reduce the likelihood of a software theft. In the first scenario, reliance on state trade secret laws may have prevented software theft. In the second scenario, the U.S. copyright laws may have provided legal redress or prevented the unauthorized copying.

Most computer companies consider their software to be secret and develop sophisticated and generally successful security procedures for protecting this valuable asset. However, other companies' attitudes toward software protection range from inattention to blatant disregard. Many companies do not recognize the value of such property until they have been victimized by its piracy or misappropriation.

Until a company is cognizant of the importance of its proprietary or confidential information, including software, no effective program for its protection can be developed. The development and implementation of an adequate protection program establishes the basis for claiming trade secret status for such proprietary or confidential information in the event it is misappropriated.

In addition, software can be copyrighted under federal law, thereby providing protection against unauthorized duplication. Trade secret status and/or copyright protection invariably help a company maintain competitive advantages arising from the development of software and other information.

This article first discusses trade secret protection of software and then describes when to consider and how to obtain copyright protection for software.

Trade Secret Protection

The most generally accepted definition of a trade secret is as follows: any formula, pattern, device or compilation of information that is used in a business and gives the business an opportunity to obtain an advantage over competitors who do not know or use it. The marketplace helps determine if secret information gives a company a competitive advantage. However, whether particular information is considered a trade secret is judged largely by the actions of the company and its employees. This is so because a court will not put more value on the information after a theft occurs than the company put on it prior to the theft.

Many techniques for protecting trade secrets have been developed to prevent difficulties before they arise. Prior to establishing procedures for protecting trade secrets, though, a company must identify its own trade secrets, as well as those utilized by the company that belong to other companies — for instance, licensees, subcontractors or joint venturers. The latter type of trade secret is almost always or should be divulged under a secrecy agreement.

The elements of software most often qualifying for protection as trade secrets are the software's unique logic and coherence. Evidence of these properties include the following: (1) novel combinations of generally known concepts, (2) the time and expense of creating features providing a competitive advantage and (3) uniqueness in application.

Successful prosecution of computer-related trade secret cases generally requires establishing that the pertinent subject matter is not generally or commonly known in the industry and is in some degree original or novel. Information that is public knowledge or of general knowledge in the industry cannot be protected as a trade secret. Thus, a company's day-to-day treatment of important subject matter may in the future be relevant to demonstrate that the company's software and related materials are, in fact, secret.

Most confidential software is generally licensed to a customer under a written agreement, which should limit the ability of a licensee to reproduce, transmit, use, copy or transfer the software and require that the confidentiality of the software be maintained. Many times access to the software is limited contractually to those persons with a "need to know," and violation of the license or confidentiality provisions may be expressly made a basis for terminating the license.

Where programs are maintained and licensed as a trade secret, licensors must follow internal procedures to ensure that the programs are kept secret. These procedures should be part of a plan that includes:

- Requiring employees and agents who have access to the software and other confidential information to execute secrecy agreements establishing express contractual obligations to the company regarding secrecy, both while employed and subsequently with a new employer.
- Ensuring that distribution of software is restricted to licensees and that those licensees comply with the terms and conditions of the license. Some companies appoint an employee to check that all their licensees comply with and understand the terms of the licenses.
- Restricting access to source code listings and other confidential information to those employees and agents with a "need to know." This may include controlling access to proprietary programs within computer systems by passwords and policing the assignment of and duration of such passwords.
- Requiring that all documents containing trade secret information be further restricted, even within the company, by requiring proprietary markings on all appropriate pages and drawings, numbering all copies and holding those persons having copies accountable for them.
- Maintaining physical security precautions such as locking doors and file cabinets, restricting access to locations with sensitive information and monitoring visitor activity.

Other Precautions

In addition to such actions, however, it is a good idea to institute certain other procedures within a company to protect trade secrets. A plan of employee education and clear rules and directives are important.

Many companies with valuable trade secrets institute programs to make their rules and directives known to employees through company bulletins and meetings. Such notices should stress that competitors are constantly interested in finding out what the company is doing and that some of the company's competitive success lies in its ability to market new and existing products at lower costs without competitors' gaining access to this type of information.

The company rules on trade secrets should refer to the se-

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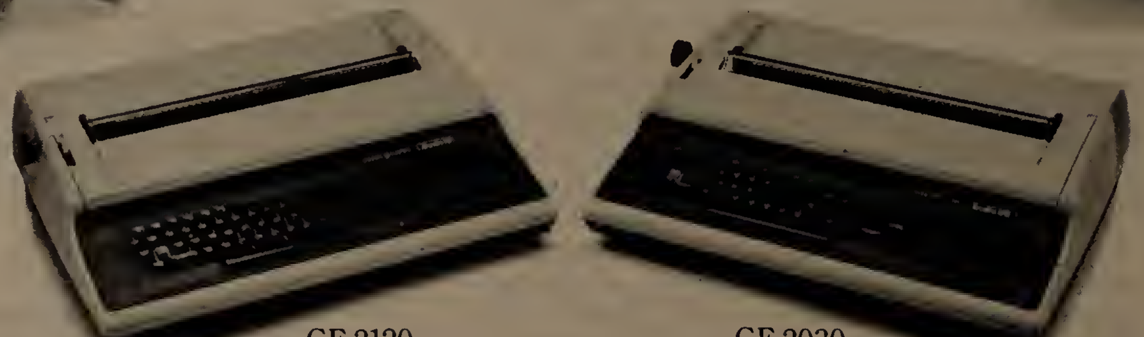

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crecy clause of the employee secrecy agreement. These rules should be prominently posted, available and enforced for all employees. Rules on removal of company property from the premises and on public release of information should also be promulgated. Such an educational program will minimize inadvertent disclosure of trade secrets by employees and make clear that voluntary dissemination of information is to be carried out solely by the company.

A review and approval procedure by which all information is examined before public dissemination is useful. Secret material should be deleted or, in some cases, release approval withheld. Review for trade secret content should be made by a company appointee charged with preserving trade secrets.

Establishing this procedure not only has the advantage of controlling dissemination but, in the event of piracy or misappropriation of trade secrets, it shows the company has taken steps to protect its secrets and that dissemination was unauthorized. Thus, prior to making trade secrets available to third parties, it is an important practice to have them sign secrecy agreements.

When marketing software, some companies do not supply any information regarding the software's capabilities, including its specifications, until the potential customer signs a secrecy agreement. These agreements should generally provide for temporary and permanent injunctions in the event the agreement is violated by the customer.

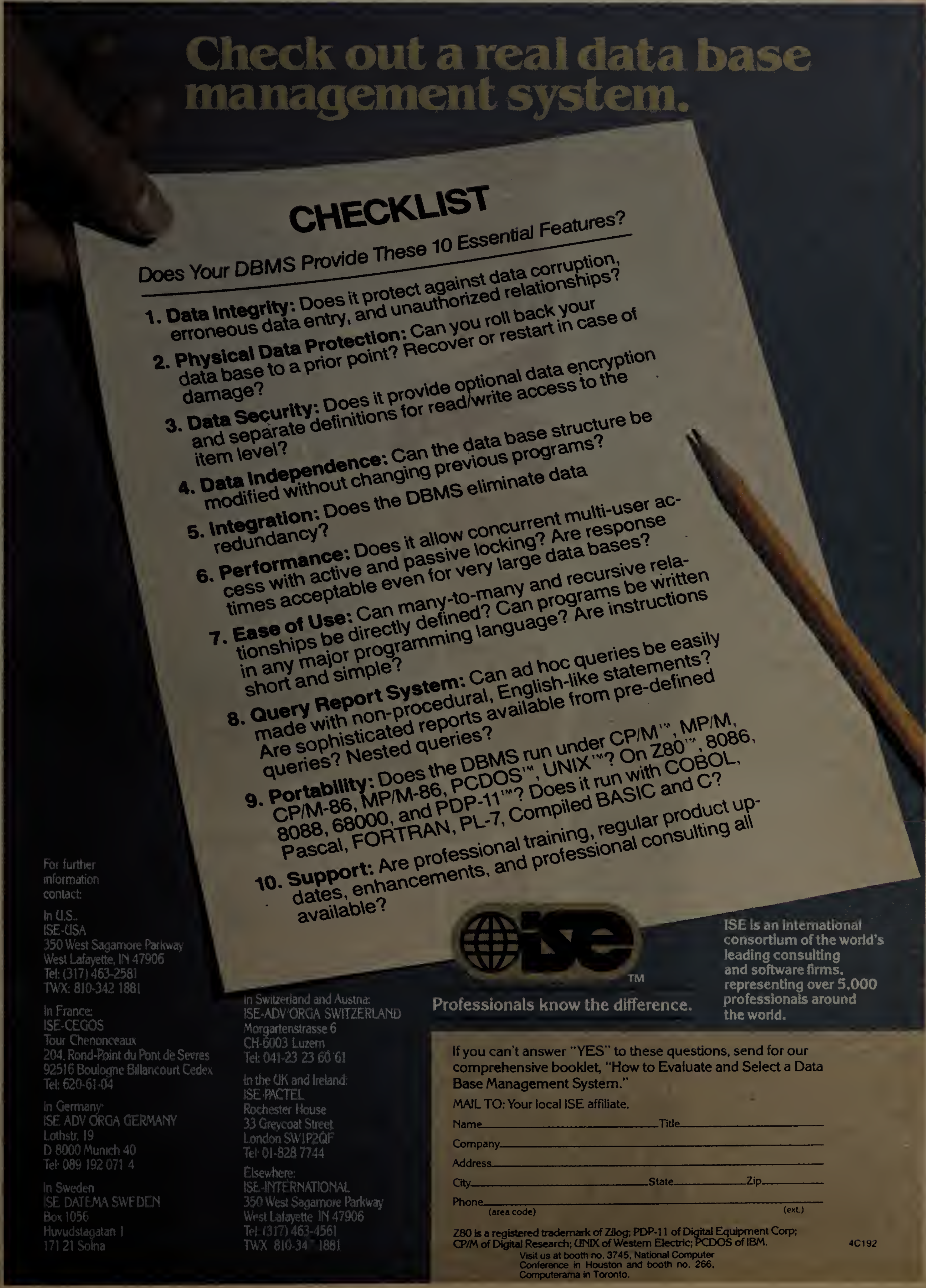
An injunction provision is important because once confidential information becomes publicly available or generally known in the industry, monetary damages will not adequately protect the trade secret status of the software or other information. Only preventing the unauthorized use of dissemination of the information protects the competitive advantage of a company and the trade secret status of the information.

Warning Labels

Confidential documents prepared for either internal or external use should, as discussed above, be protected by a warning on the document. A suitable legend to be imprinted on all pages and all copies of such documents is:

"This document contains proprietary information of the ABC Company and its receipt or possession does not convey any right to reproduce, disclose, transmit, manufacture, use or sell anything it may describe. Reproduction, disclosure or use without specific written authorization of the ABC Company is strictly forbidden."

Software companies would also be well advised to take certain technical steps that can be used later to demonstrate whether copying or misappropriation of computer programs has occurred. One technique is to place a nonfunctioning but unique code in licensed materials to help prove an infringement or misappropriation. Under certain circumstances it is advisable to embed "self-destruct" codes in licensed ma-



Check out a real data base management system.

CHECKLIST

Does Your DBMS Provide These 10 Essential Features?

1. **Data Integrity:** Does it protect against data corruption, erroneous data entry, and unauthorized relationships?
2. **Physical Data Protection:** Can you roll back your data base to a prior point? Recover or restart in case of damage?
3. **Data Security:** Does it provide optional data encryption and separate definitions for read/write access to the item level?
4. **Data Independence:** Can the data base structure be modified without changing previous programs?
5. **Integration:** Does the DBMS eliminate data redundancy?
6. **Performance:** Does it allow concurrent multi-user access with active and passive locking? Are response times acceptable even for very large data bases?
7. **Ease of Use:** Can many-to-many and recursive relationships be directly defined? Can programs be written in any major programming language? Are instructions short and simple?
8. **Query Report System:** Can ad hoc queries be easily made with non-procedural, English-like statements? Are sophisticated reports available from pre-defined queries? Nested queries?
9. **Portability:** Does the DBMS run under CP/M™, MP/M, CP/M-86, MP/M-86, PCDOS™, UNIX™? On Z80™, 8086, 8088, 68000, and PDP-11™? Does it run with COBOL, Pascal, FORTRAN, PL-7, Compiled BASIC and C?
10. **Support:** Are professional training, regular product updates, enhancements, and professional consulting all available?

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terials that are licensed for a term.

In addition, it is important to number products distributed in the mass market so that misappropriations may be more easily identified and thus better investigated. If practical, encryption should be considered. Under this approach, the supplier provides a "key" upon payment that "unlocks" the program for use.

Keeping Tabs

As a practical matter, software licensors must balance the protection of their legal rights with the necessity of keeping customers' good will. However, licensors should undertake necessary policing to protect their rights. The following procedures are suggested:

- Salesmen and maintenance personnel should be instructed to report to management's attention any customer violations of which they become aware. (Some companies have begun paying rewards for this information.)
- Memoranda describing the duties and obligations of the licensor's customers under their agreements should be provided to all customers.
- All licensing infractions should be handled as soon as they are discovered.

A reminder of the license obligations generally suffices for most customers. Unfair competitive practices by another software vendor, however, should be harshly and aggressively treated.

Terminating Personnel

Because of personnel turnover, the effectiveness of any protection system is limited. The terminating employee will often have in his possession material, documents and equipment representing company trade secrets. Not only the employee's physical possessions but his attitude toward the company is critical to the continued protection of the company's trade secrets.

A good termination procedure should include return and inventory of documents and material for which the employee was held accountable. The departing employee should sign a document that certifies he does not have in his possession, nor has he failed to return, any information or property properly belonging to the company. Such a statement should certify that the employee will continue to comply with all the terms of the secrecy agreement he signed previously.

If a departing employee is going to work for a competitor, it may be advisable to notify him of his general secrecy obligations and also to list specifically the information and things considered by the company to be trade secrets. If possible, the employee should sign a document specifically acknowledging those trade secrets.

When a company has reason to believe that a departing employee may intend to divulge a trade secret (or that his new employer is trying to obtain one), a letter to the new employer pointing out the factual situation and the employee's obligations may be desirable.

However, such a letter should be approached with

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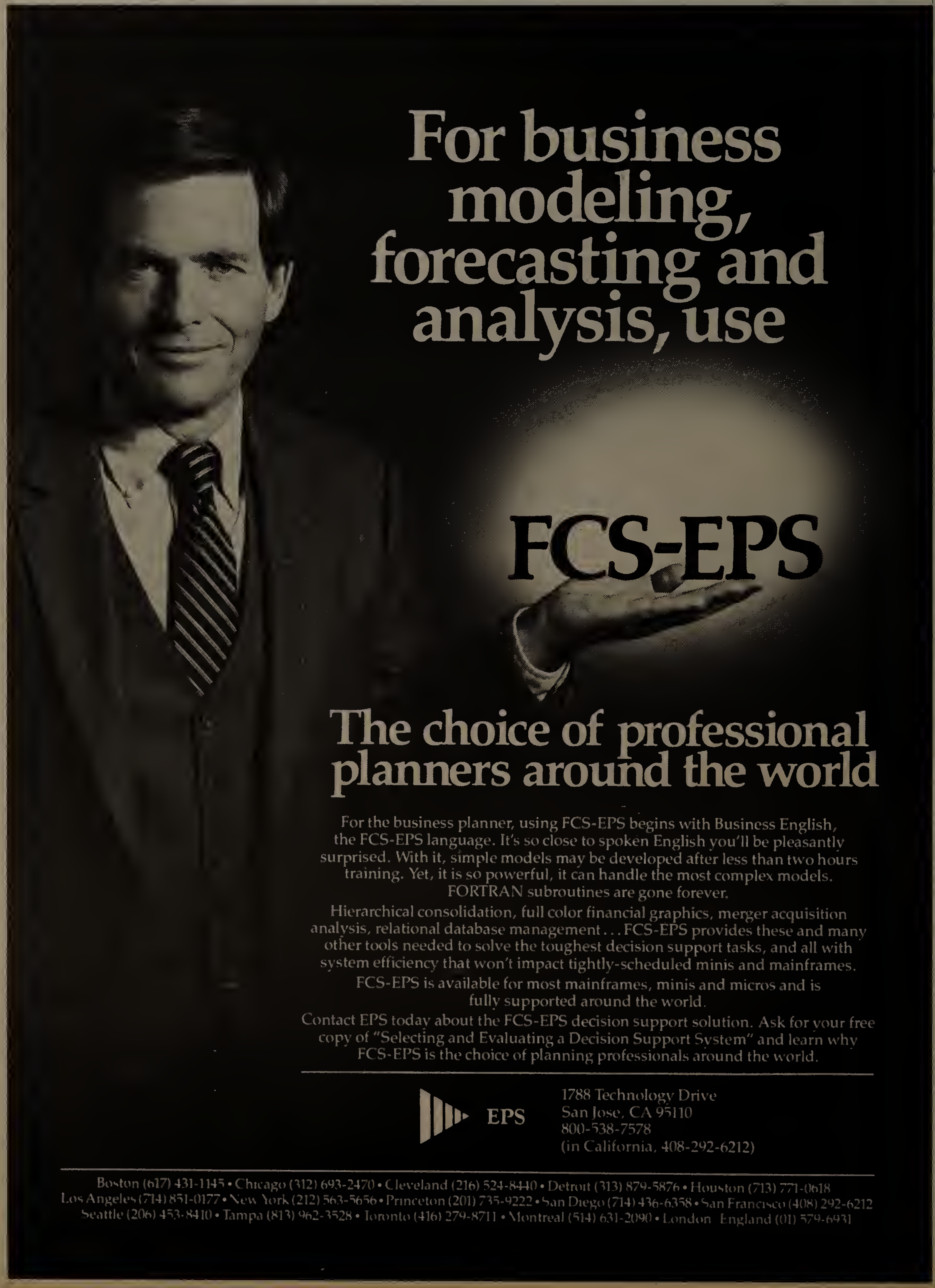
For the owner to obtain registration, the copyright office must receive an application, deposit of copies of copyrighted materials and the required fee. For computer programs published only in machine-readable form, the deposit consists of one visually perceptible copy of "identifying portions" containing at least the first 25 and last 25 pages of the program listing. For registration purposes, computer software is considered to be in "class TX" — nondramatic literary works — and the application must be made on Form TX. The form must be accompanied by a $10 fee and certain specified information.

It is strongly recommended that before a software company actually files for a registration of software with the U.S. Copyright Office it first consult with an attorney experienced in computer law. There may be one important disadvantage to registration if the software is also considered by the company to be a trade secret: Registration might be considered a public disclosure. Thus, care must be taken to protect the secrecy of the software, while attempting to comply with the deposit requirements of the copyright law.

In general, there is a concern that trade secret status may be lost or



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compromised by the required deposit of materials with the copyright office. There are, however, several answers to this concern. First, a federal court in Wisconsin has indicated that where attempts are made to safeguard materials as trade secrets such that only a "limited" publication occurs, an election of statutory copyright may not defeat a claim of secrecy. This case is currently on appeal to the Seventh Circuit Court of Appeals.

Second, if a lengthy program listing in machine-readable language is only to be registered, the "identifying portions" filed for registration purposes will not necessarily disclose secret material.

Third, if the deposit would disclose secret materials, requests for "special relief" from the deposit requirement may be made. In addition, the copyright office is aware of this problem and is presently reevaluating its policies in connection with deposits of computer programs.

Collective Action

Although individual software companies can take actions to prevent or hinder software theft, part of the solution to this problem lies in collective industrywide action, both privately and in the public sector. In June 1981 a first step in this direction was taken when the Association for Software Protection (ASP), a nonprofit organization based in California, was formed specifically to forward the protection of computer software. ASP is currently providing membership newsletters, referral services, practical software protection assistance and other services to interested parties throughout the company.

Through the efforts of ASP and others, the industry can be educated as to the scope of software piracy and methods for preventing such piracy. As industry awareness increases and a concerted effort is made to fight this menace to the industry, the software pirate will find it more difficult to succeed and survive.

An individual company cannot structure a successful program to prevent software piracy until it recognizes the potential threat to its livelihood. Likewise, until the industry recognizes the threat and makes a concerted effort to prevent it, software piracy will continue to harm the computer industry.

How would the opening scenarios be different if Company X and Company A had taken the steps described above before the acts of piracy had occurred?

If Company X had taken steps to protect its new software product as a trade secret, it could have informed Company Z of the programmer's contractual secrecy obligations. If this did not deter Company Z, Company X would be in a strong position to claim unfair competitive action by Company Z and seek preliminary and permanent injunctions against the programmer and Company Z.

If Company A had licensed its software to Company B under a properly worded written license agreement and had copyrighted the software prior to the unauthorized use of the software by Company B, it could have taken the following actions. First, it could have terminated the license with Company B and, under the terms of the agreement, repossessed the software and all copies. Second, since Company A's copyright had been removed, Company A could have filed an action in federal court against Company B seeking damages.

Most likely, though, if Company A periodically had had an employee contact all its licensees, including Company B, to make sure they understood the terms of their licenses and that Company A intended to enforce the terms of its licenses, Company B would probably never have risked an illegal software sale.

About the Authors

Harvey S. Gilbert and Jonathan Joseph are attorneys with the Los Angeles-based practice Rosen, Wachtell & Gilbert.

Both attorneys have authored papers on various legal issues. Gilbert received a B.S. and J.D. from the University of California, Los Angeles. Joseph holds a B.A. from University of the Pacific and a J.D. from Washington University.

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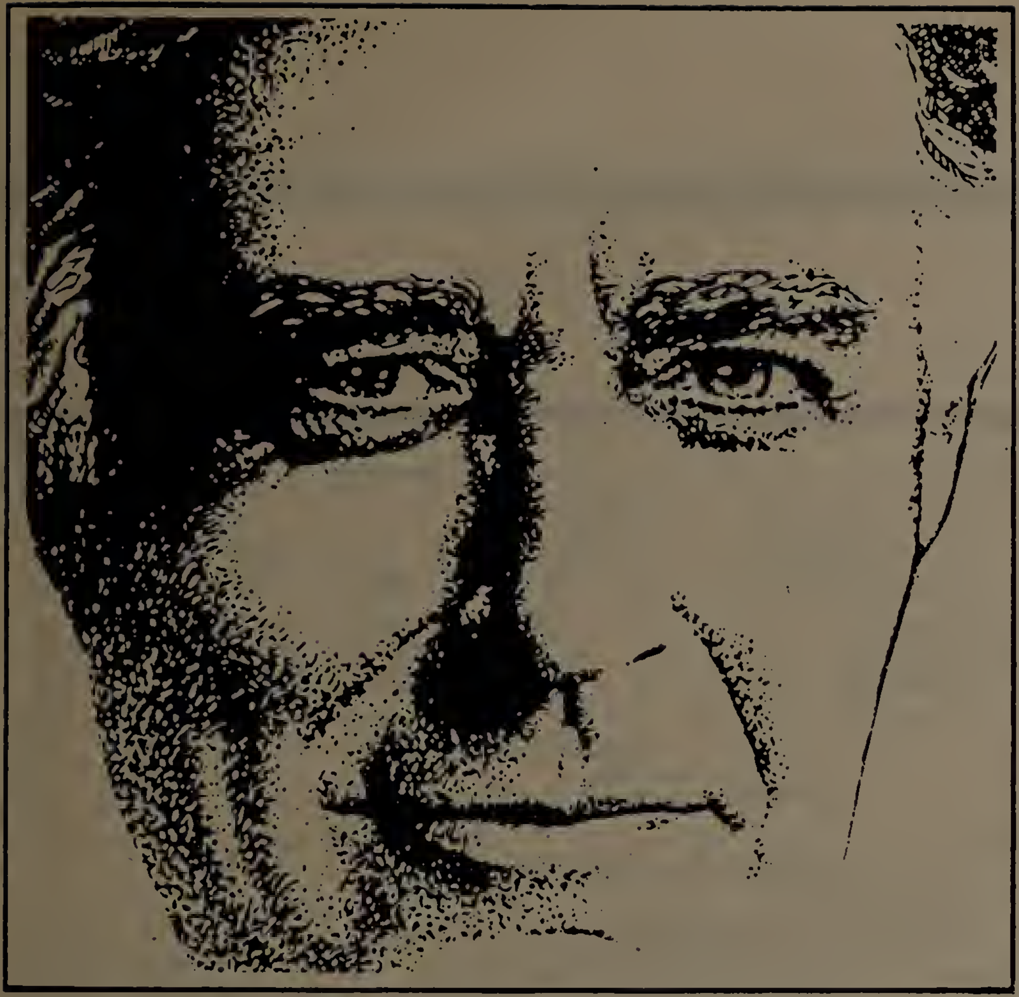


A CLOSE LOOK AT IMS/VS 1.2

BY IRWIN KONOPOLSKY

THE LATEST VERSION OF IBM'S IMS/VS — Release 1.2 — contains new functions and enhancements that improve the flexibility and performance of the product in all shops that choose to implement them. The high points of the release include:

1. Data Sharing.
2. Data Base Recovery Control Feature, Release 2.
3. Support for new direct-access storage devices (DASD).
4. Enhanced printer support.
5. DB/DC system enhancement.

The object of this article is to describe these highlights and to explore the impact they will have on the IMS/DB and IMS/DB-DC user. The information contained herein is based upon currently available IBM documentation. No guarantee can be given that the features will be implemented as described.

Data Sharing

By far the most exciting feature of IMS/VS 1.2 is its ability to share data bases among several concurrently executing IMS subsystems. A subsystem is, by definition, an on-line IMS system, a DL/1 batch region or an IMS/VS utility program. This enhancement comes at a time when many IMS shops are keeping their on-line systems up for an increasing portion of the day. This has the effect of shrinking the batch window available for off-shift processing.

Data Sharing may be just the solution for this situation, especially if the batch processing is for the purpose of producing reports that do not require data at the latest update level. The Data Base Recovery Control (DBRC) feature is used to implement Data Sharing and is in fact a prerequisite for it. Let us now examine some of the concepts of Data Sharing.

Data Sharing is available at either the data base level or at the block level. Sharing at the data base level indicates that only one IMS subsystem may update the data base at any time. There may, however, be other concurrent "read-only" users of the data base. An alternative when sharing at the data base level is to have multiple "read" access users when there is no updater. (Note: A "read-only" user is not guaranteed data integrity; a "read" user is.) See Figure 1 (on In Depth/12) for an example of sharing at the data base level.

Data Sharing at the block level permits multiple IMS subsystems to have concurrent update access, read access or read-only access to a given data base. The restriction is that no two subsystems may concurrently update the same block (or control interval in Vsam). If a subsystem has read access, its reads are serialized with respect to other subsystems' updating activities at the block level to ensure data integrity. If read-only access is specified, the subsystem does not participate in block-level sharing, and its reads are without integrity. Block-level sharing is only possible under MVS. Figure 2 (on In Depth/12) gives an example of block-level sharing.

Note that Gsam and Fast Path data bases may not participate in Data Sharing. The multiple IMS subsystems discussed using either kind of sharing may either be on the same CPU (intraprocessor sharing) or on different CPUs (interprocessor sharing).

Each data base that is to participate in Data Sharing must be registered in DBRC's Recovery Control (Recon) data set. Registration is accomplished with a DBRC command of INIT.DB which will, among other things, set the SHARELVL of the data base at 0, 1, 2 or 3. The meanings are explained below:

- SHARELVL 0: Data base may not be shared (enforces nonsharing).
- SHARELVL 1: Data base may participate in sharing at the data base level (intra- or interprocessor).
- SHARELVL 2: Block-level sharing is allowed within one processor only.
- SHARELVL 3: Block-level sharing is allowed within one or two processors.

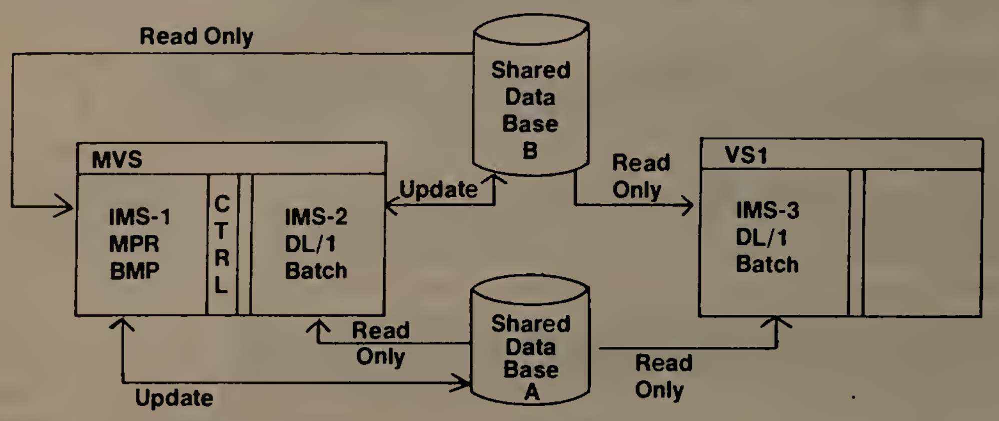
The SHARELVL of a data base may be changed dynamically through the use of an authorized terminal operator's command. A SHARELVL of 0 is recommended for a data base that will not participate in Data Sharing, as this will protect it from unauthorized access by IMS subsystems on other processors.

Nonsharing is enforced within a processor with a DISP=OLD on the JCL.

Access Intent

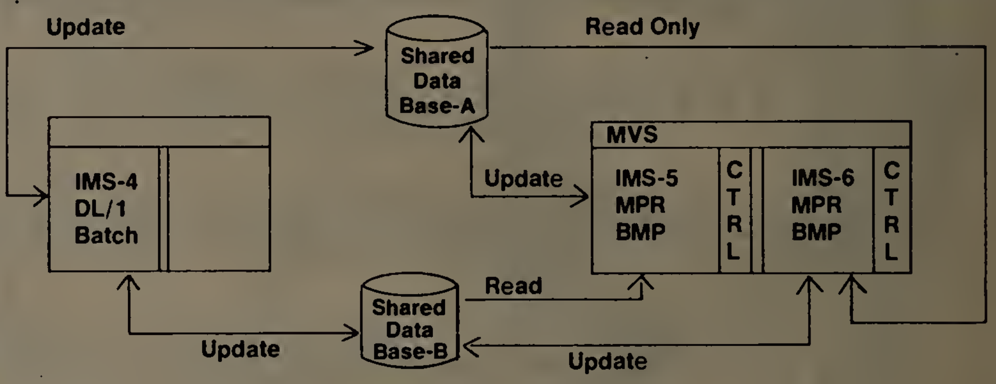
In addition to SHARELVL, it is necessary to determine the access intent of an IMS subsystem. For a batch subsystem, the access intent will be determined by the highest level achieved by the combined processing options (Procopts) coded in the DB PCB.

For an on-line system, the access intent is coded during system definition in the ACCESS keyword on the data base macro. The value coded should allow access at a high enough level such that all PSBs defined to the system may be scheduled. If a particular PSB has a Procopt that is higher than the access intent defined



Notes:
1. Subsystems may be in the same or different processor.
2. Operating system may be MVS or VS1.
3. Sharing is done at the data base level, not the subsystem level; i.e., IMS-1 is the unique updater of shared Data Base A while IMS-2 is the unique updater of shared Data Base B. An IMS subsystem may be an updater of one data base while having read-only access to another.
4. Updating subsystem may be batch or on-line.

Figure 1. Data Sharing at the Data Base Level



Notes:
1. Multiple updaters allowed for each data base.
2. Operating system must be MVS.
3. Maximum of two processors allowed.
4. IMS-6 has read-only access to shared Data Base A. It will not participate in block-level sharing serialization of requests, and the read will be without integrity.

Figure 2. Data Sharing at the Block Level

for the data base, it will not be scheduled and the associated program will be stopped. The access intent of an on-line subsystem toward a particular data base may be dynamically changed using a /START DATABASE LOCAL command. Figure 3 shows the relationship between the Procopt on the PCB, the access intent of the PCB and the ACCESS=value on the data base macro.

Refer to Figure 1 and let us assume that the SHARELVL for Data Base A has been set to 1 (sharing permitted at the data base level). Let us further assume that the access intent of the IMS subsystems is as shown. We will now go through a scenario of how Data Sharing would work.

1. We start up the on-line system (IMS-1) and it signs on to DBRC. A subsystem entry is created in the Recon data set for IMS-1.

2. A PSB is scheduled which requests access to Data Base A. The processing intent of the PSB is compared with the access intent as defined in the data base macro and is found to be compatible.

3. The on-line system requests authorization from DBRC to access Data Base A.

4. DBRC checks the SHARELVL and finds that sharing at the data base level is permitted, which allows at most one updater. As no other subsystem is authorized to access the data base and, assuming that the data base needs no backout, recovery or image copy, IMS-1 is authorized to access Data Base A. DBRC updates the Recon data set to reflect that IMS-1 has been authorized to access Data Base A and that Data Base A is being updated by IMS-1.

5. The batch DL/1 system (IMS-2) is now started and signs on to DBRC. It requests authorization to use Data Base A and, as it requires read-only access, it is granted. Appropriate records are written in the Recon data set. If IMS-2's access intent had been update (or even read), authorization would have been denied.

6. As each subsystem terminates (normally), the Recon data base record for Data Base A is updated to indicate that the subsystem has been unauthorized from accessing the data base. The subsystem entries in the Recon data set are deleted.

The advent of Data Sharing will undoubtedly increase the use of read-only access to data bases (PROCOPT=GO). An inherent problem with this Procopt occurs when you are following a pointer chain within the data base (GET NEXT processing) while another application is updating the data base. It is possible that the other application will delete a segment, making your pointer invalid. This will generally lead to a U085x abend. An attempt has been made by IBM to solve this problem with a new processing option of GON/GOT.

When you specify GON as the processing option, many potential abends are intercepted and a status code of "GG" is returned. It is then up to the application program to determine whether it will terminate or attempt to access the data via another path.

A processing option of GOT per-

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Procopt Value In DB PCB	Access Intent	Access=Value On Data Base Macro
GO	Read-Only	RO
G	Read	RD
I, R, D or A	Update	UP
L or E	Exclusive	EX

Figure 3. Processing Options and Access Intents

forms in exactly the same manner except that the call is retried once if the initial call returns an invalid pointer. If the pointer is still invalid on the second try, a "GG" status code is returned.

Path Call Procopt

The Procopt for path calls is specified GONP or GOTP. These Procopts are valid in an environment without Data Sharing as well as with Data Sharing.

As block-level Data Sharing is more complex than sharing at the data base level, let us look at it in closer detail. Block-level sharing will allow multiple updaters of shared data bases but will prevent concurrent updates to the same block. In order to accomplish this, some mechanism is necessary in the shared environment that will function in the same manner as Program Isolation does within a single IMS system.

The IMS Resource Lock Manager (IRLM) performs in just this way and is in fact a prerequisite for block-level sharing. For intrasystem sharing, only a single copy of the IRLM is needed. IRLM will grant and release block-level locks and will in general serialize such functions as OPEN and CLOSE.

For intersystem block-level sharing, a copy of the IRLM is necessary in both processors, each copy in its own address space. The processors communicate with each other through a twin-tailed 3705. As a result, an additional software requirement is ACF/Vtam Multi-System Networking Function (MSNF) Release 2, 3 or 4. Vtam is not required for operation on a single CPU.

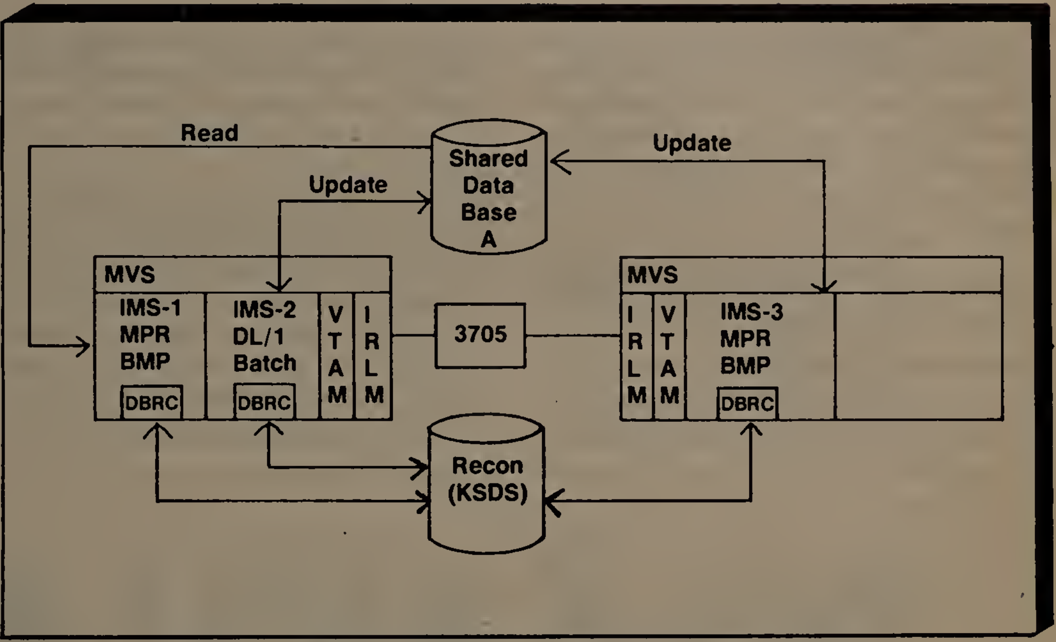

Figure 4. Interprocessor Block-Level Data Sharing

In this configuration, each IRLM would have control for a user-specified amount of time to service requests for its associated subsystems. In order to accomplish this, each IRLM must maintain knowledge of the other and of all global locks held and waiting. At the end of each time slice, control will be passed to the opposite IRLM using a NOTIFY command to inform it of locks now held, locks now released, I/O errors on data sets and global IMS/VS commands. The IRLMs will participate in deadlock detection and in breaking deadlocks.

IRLMs can inform each other of data set extensions created by their owned subsystems. No additional support is required for this last function for Osam data sets, but the Data Facility/Extended Functions program product is required for Vsam data sets. Figure 4 gives a detailed view of interprocessor block-level sharing.

Note on Locks

A note on locks: Global locks are locks on resources shared among several subsystems using block-level sharing. The resources controlled are Isam/Osam blocks or Vsam CIs. The locks are controlled by the IRLMs, and the resources are owned by subsystem buffer handlers. Local locks are locks on resources shared within a single subsystem. The resources are individual segments or data base records. They are controlled by program isolation and owned by an application program.

Some final notes on Data Sharing:

1. Specify Vsam Shareoptions to match your sharing requirements for Vsam data bases. The DBRC Recon data set must also specify Shareoptions, as it is a Vsam KSDS and it will be shared among systems. For block-level sharing, Shareoptions (3,3) is necessary for both data bases and Recon data set.

2. Data sets must be coordinated so that their status is the same across all subsystems. These include Recon data sets, data base data sets (with DISP=SHR), ACBLIB, DBDLIB and PSBLIB data sets. The same is true for libraries containing HDAM randomizers or DL/1 user exits.

3. For the IRLM, you must specify an IRLM name on the IMSCTRL macro or override that name on the

Guide to Terminology

Cross Memory LSO: LSO with parallel DL/1 capability without having to switch from a dependent region TCB to an IMS control region TCB. Utilizes Cross Memory Services of MVS SP/2.

DBRC: Data Base Recovery Control — A feature of IMS used to control backup and recovery of IMS data bases. DBRC is also used to implement the Data Sharing feature of IMS.

Data Sharing: A feature of IMS that allows several concurrently executing IMS regions to share data bases.

DBD: Data Base Definition — An IMS control block that defines the structure of a data base.

DSLOG utility: A utility of DBRC that merges log tapes created by several concurrently executing IMS subsystems into a single DSLOG data set.

IRLM: IMS Resource Lock Manager — A feature of IMS necessary for block-level data base sharing. It serializes requests from several IMS systems so as to isolate them from one another.

LSO: Local Storage Option — Allows the installation to move some IMS modules, buffers and work areas from CSA to the control region.

Parallel DL/1: The ability of the IMS control region to service requests for DL/1 services from several dependent regions concurrently.

Path call: A DL/1 call that retrieves several segments in a hierarchical path at once.

PCB: Program Control Block — An IMS control block that is defined within the PSB. It defines an application program's view of one particular data base.

Procopt: A parameter coded within the PCB that indicates the update intent of the application program towards a segment or segments. The intent may be read without integrity, read with integrity, insert, delete, replace or exclusive.

Program Isolation: A feature of IMS that allows multiple applications programs within an on-line system to update the same data base concurrently. Program Isolation operates within a single IMS system; IRLM operates among several IMS systems.

PSB: Program Specification Block — An IMS control block that defines the application program's view of all data bases it accesses. A PSB contains one or more PCBs. One PSB is defined per application program.

Recon data set: Recovery Control Data Set — Data set used by DBRC to record the status of the data bases it controls.

SHARELVL: An IMS parameter that indicates the level of sharing permitted for a given data base.

TCB: Task Control Block — Highest level control block that describes a task within an address space.

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IRLM PROC JCL. A scope of GLOBAL is necessary for interprocessor sharing and LOCAL for intraprocessor. You must start the IRLM before you start the IMS subsystem or else IMS will default to sharing at the data base level.

Data Base Recovery Control (DBRC) Release 2

The current release of the DBRC feature is definitely not the most exciting aspect of IMS/VS 1.2, but it is a prerequisite for the Data Sharing feature. The original intent of the DBRC feature was to assist users in controlling the backup and recovery of their IMS data bases.

Backup, recovery and reorganization in an IMS environment utilize several components that would best be explained now. In order to back up an IMS data base, one runs a utility to take an image copy of the data base. This is nothing more than a "snapshot" of the data base at a point in time. The image copy by itself cannot be accessed as a data base but must first be processed by the IMS recovery utility.

The IMS recovery utility uses as input the latest image copy available and all change accumulation and log tapes created subsequently. A log tape is created whenever any type of IMS region (on-line or batch) is run. The log tape records, among other things, all data base changes caused by the IMS region. If one has created many log tapes since the last image copy, they may be combined into a single change accumulation tape. The recovery utility then takes the image copy and applies all changes contained in the change accumulation tapes and log tapes input to it. This brings the data base up to the current point in time.

A data base reorganization generally "cleans up" a data base by recapturing free space that is currently held by segments that are flagged as deleted but not physically erased. A reorganization also places segments that are related as close together on disk as possible (thereby reducing data base fragmentation). Naturally, a reorganization will change the relative byte address (RBA) of segments within the data base. The IMS recovery utility applies data base changes to the image copy using the RBA of each segment.

Therefore, if you attempt to recover a data base using an image copy and a log tape from before a reorganization along with a log tape from after the reorganization, the result will be a totally unusable data base. This is because the RBA of the segments in the second log tape disagree totally with the RBA of the segments in the image copy and the first log tape. The best way to prevent this situation is to take an image copy as soon as you reorganize.

The prefix update utility is run as part of a data base reorganization if the data base is involved in a logical relationship with another data base. Its function is to place an RBA pointer in the prefix area of all segments that are part of the logical relationship. If this utility is run, an image copy should be taken immediately thereafter.

Backup, Recovery Control

To help control backup and recovery, DBRC will record in its Recon data sets information concerning image copy, change accumulation, data base recovery and IMS log data sets. The information would include DBD names, data set names, log tape and change accumulation volume serial numbers, as well as date and time stamps for each operation. DBRC could then be called upon to create the JCL and control statements for recovery of the data base or to verify the JCL and control statements that you supply. This would tend to reduce errors caused by input omissions or inaccuracies. There were, however, several holes in the logic that could have caused trouble. These have been fixed in DBRC-2 as follows.

There is now an interface between DBRC and the Hisam reorganization reload utility and between DBRC and the HD reorganization reload utility. The reload utilities notify DBRC that a reorganization of the data base has been done and that an image copy should now be taken.

DBRC will not authorize the data base for processing until the image

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copy function is performed. An exception to this is that the prefix update utility is permitted to execute against the data base. The prefix update utility will cause a similar notification to DBRC. This was a much needed enhancement, as recovering a data base using log or change accumulation tapes that span a reorganization is a shortcut to disaster.

An interface now exists between the log recovery utilities and DBRC. These utilities include system log recovery and the DEDB (Data Entry Data Base) log tape check and copy utility. Their function is to recover log tapes that are damaged or incomplete. The first utility is for a normal IMS log, and the second is for a log that contains entries for a Fast Path DEDB data base. In both cases, a new log tape is created (hence with a new volume serial number).

DBRC will now record in its Recon data set a time stamp as to when the primary and secondary log data sets were closed. It will also record changes in log tape volume serial numbers resulting from the execution of the above mentioned utilities. This will eliminate the manual intervention previously necessary to change log tape volume serial numbers in DBRC.

The data base backout utility backs out changes made to data bases by transactions that did not complete normally. If backout processing fails, during either dynamic backout or emergency restart, IMS/VS will now invoke DBRC to flag the data base entry as needing backout. In a similar manner, if an I/O error occurs while accessing a data base, IMS will invoke DBRC to flag the data base entry as needing recovery. In both cases, DBRC will not authorize the data bases for further processing until either batch backout or forward recovery (respectively) is run. When these utilities are run, the associated flag is reset in the Recon data set for the data base involved.

Skeleton JCL for the recovery utilities is supplied with DBRC in a PDS. The current release will allow the user to customize the JCL according to the installation's standards. Certain key words in the JCL may now also be overridden at execution time.

A subset of DBRC commands is now available to be entered from the online system by an authorized terminal operator. The commands included are those that initialize, modify or delete records in the Recon data set. The operator may also generate JCL for the execution of recovery utilities or to list specific contents of the Recon data set. In order to generate JCL or to initialize or change members of the Recon data set, specific DD cards must be included in the bring-up JCL for the control region.

The most important change to DBRC in IMS/VS 1.2 is that it now plays a primary role in the implementation of Data Sharing. Data Sharing is the concurrent use of IMS data bases by application programs executing in different IMS subsystems (batch or on-line). As was mentioned previously, DBRC is a prerequisite for Data Sharing. In support of this feature, there are several interfaces between the IMS region controller and DBRC.

When an IMS region starts up, it will sign on to DBRC. Sign-on will only occur if DBRC=YES has been coded on the IMSCTRL macro at system definition time and it is not overridden on the bring-up JCL. If sign-on is successful, a subsystem entry is created in the Recon data set that includes the subsystem ID and the type of subsystem it is (batch or on-line). Other information contained in the entry specifies whether this is an initial sign-on or a sign-on for recovery.

When the IMS region terminates, it signs off from DBRC. The subsystem entry is either deleted or modified, depending upon whether the termination is normal or abnormal. In the case of abnormal termination, a decision is made as to whether the entry is to be deleted or modified, depending upon the authorization status of the data bases at termination time.

A second interface between DBRC and the IMS control program involving data base authorization also exists. Remember, that as we are potentially in a shared data base environment, checks must be made as to whether this data base is authorized to be shared and whether the

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level of access requested (read, update or exclusive) will be permitted. The authorization routine checks the SHARELVL of our data base, the availability of the data base (does it need an image copy, recovery, backout?) and whether it is being used by any other subsystem.

If all checks are passed, the data base is authorized for use by our subsystem. If one of the data bases is not "registered" (under the control of) DBRC, but all other data bases are authorized, the call is successful. However, if one of the data bases in the call seeking authorization fails one of the checks, none of the data bases are authorized.

With the addition of Data Sharing, DBRC must play a role in propagating certain IMS/VS on-line commands across multiple subsystems. These commands are /START DATABASE, /STOP DATABASE,/ DBDUMP DATABASE and /DBRECOVERY DATABASE. If it is the intent of the user to affect multiple subsystems, then the global form of these commands should be entered. When the local form of the command is issued, only the subsystem entering the command is affected. The effect of the global commands is as follows:

/START GLOBAL: Invokes DBRC and, if the data base needs no recovery, image copy or backout, the "prohibit-further-authorization" and the "read-only-users" flag is reset.

/STOP GLOBAL: Invokes DBRC to prohibit further authorization for any subsystem.

/DBDUMP GLOBAL: Invokes DBRC to change the authorization from update to read-only for any subsystem that has update access. Those subsystems have their update access reinstated with the first /START GLOBAL command.

/DBRECOVERY GLOBAL: Prohibits further authorization of any kind for the named data bases.

Note: The above commands apply to on-line subsystems only.

Finally, it is obvious that in a Data Sharing environment, it is possible that there are multiple subsystems concurrently updating a given data base. This can present some difficulty when it becomes necessary to recover the data base. DBRC's response to this problem is a "merge-needed" (MN) record in the Recon data set. This will cause a job step to be generated to execute the DSLOG utility that will merge multiple log tapes into a single DSLOG data set. This occurs whenever the GENJCL.RECOV command is issued to DBRC to generate the JCL to recover a data base. When the log tape merge is successfully completed, the MN records are deleted.

New DASD Support

IMS/VS 1.2 offers full support for the 3375 and 3380 DASD. These disks offer faster access time and greater packing density while consuming less power and floor space and dissipating less heat.

The 3375 supports a full range of IMS data bases and data sets on the 30 series and 4300 processors. It must attach through a 3880 storage controller to a block multiplexer channel with a minimum data transfer rate of 1.86M byte/sec. The 30 series processor requires the data streaming feature for this. The 3375 requires MVS/SP Release 1 or OS/VS1 Release 7 with Basic Programming Extensions. The Data Facility/Device Support program product is also required.

The 3380 will also support a full range of IMS data sets but only on 30 series or 370/158 or 168 processors. The 3380 provides a data transfer rate of 3M byte/sec, attaching through a 3880 to a block multiplexer channel. On the 30 series, the data streaming feature is needed for the full data transfer rate. On the 370/158 and 168, there is only a 1.5M byte/sec block multiplexer. The Speed Matching Buffer feature on the 3880 is required to attach the 3380 to these processors.

The 3380 requires MVS/SP 1 with the Data Facility/Device Support program product installed. OS/VS1 does not support the 3380.

Printer Enhancements

IMS 1.2 has incorporated several enhancements in terms of printer support. Printers defined as SCS1 and 3270P are now supported by MFS using the extended attributes of

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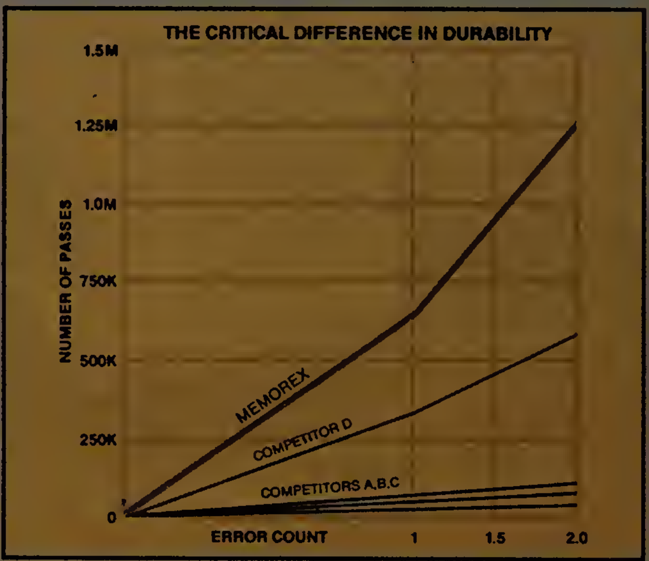

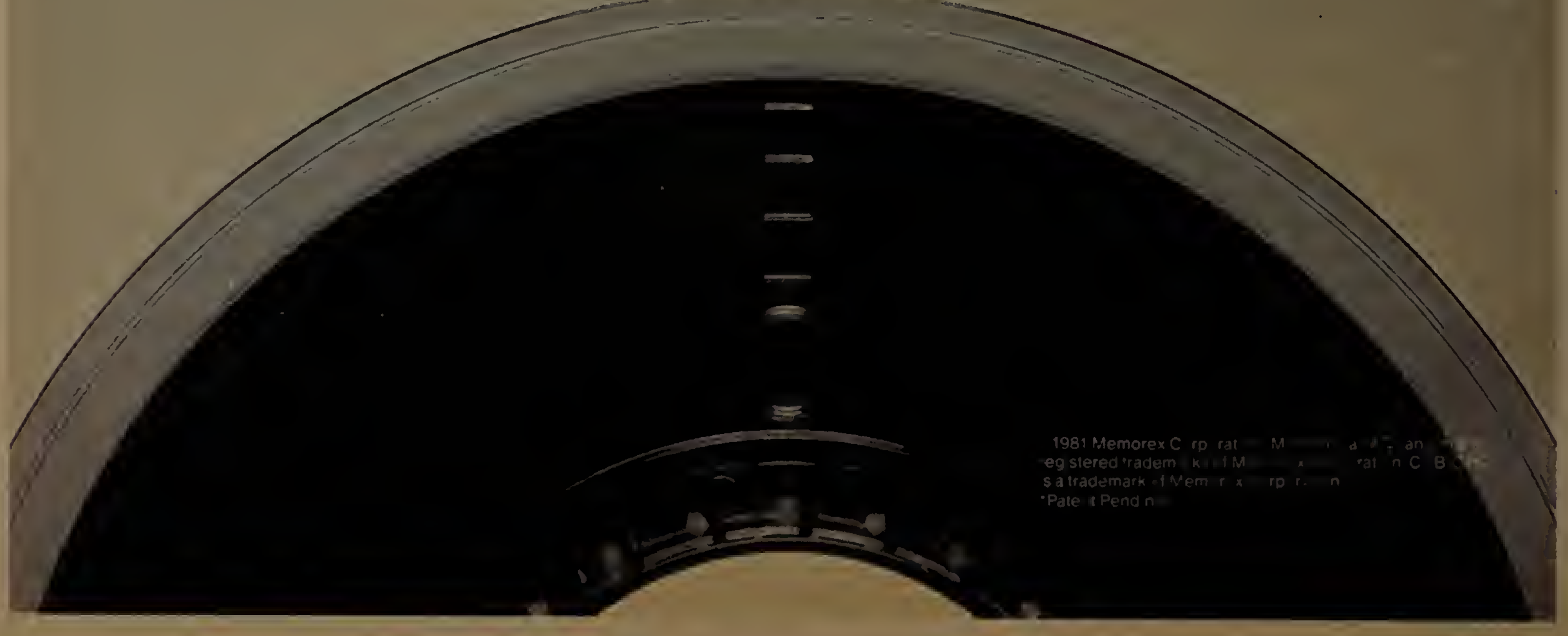

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color, highlighting and programmed symbols. SCS1 printers may now also use MFS to set line density without loss of a print line and to set vertical format on a message-by-message basis.

It is now possible to share a printer defined as Slutype1, Slutype4 or remote BSC/Vtam 328X with another Vtam subsystem. If you code SHARE in the options statement on the terminal macro, IMS will automatically acquire the printer when data is queued for it or the PFK12 copy function is initiated. If the printer is in use by another subsystem, the IMS request for it will be queued until it is available. In a similar manner, coding RELRQ in the terminal macro will allow another subsystem to acquire this printer when IMS is not using it. NORELRQ will keep the printer attached to IMS.

Shared printer support may also be managed from IMS with the use of a SIM-LOGON exit. If this option is selected, a user-written SIMLOGON exit will be invoked whenever a message is queued for a printer defined as shared. The exit could then be aware of the status of the printer (or transaction), and then either ignore the request, issue the SIM-LOGON Vtam macro or queue a transaction for an Automated Operator Program.

DB/DC System Enhancements

Program Isolation. Program Isolation is a feature of IMS that allows multiple application programs (within the on-line system) to update the same data base concurrently. It accomplishes this by isolating the effects of each application and forcing each to single thread in the event that several of them intend to update the same segment occurrence. Each update is committed when the program reaches a sync point.

A problem with Program Isolation prior to Release 1.2 was that single threading was forced in response to multiple GET calls to a segment occurrence. While this would be logical in response to multiple GET HOLD calls (indicates update intent), it made no sense in the "no update" case. To alleviate this bottleneck, there are now four levels of enqueue in Program Isolation. They are:

1. Read — update present.
2. Read — no update.
3. Single update.
4. Exclusive.

As usual with Program Isolation, the titles of the enqueue levels do not reflect their true meaning. However, a transaction that has no update intent will now enqueue at the new Level 2. This will allow multiple nonupdating transactions to have an identical position within the data base. Performance for inquiry programs that must read with integrity will definitely improve with this enhancement.

Data Base Open for Input. In previous releases of IMS, all data bases were opened with the authorization to write. This made it impossible to share data bases regardless of which Vsam Shareoptions were chosen. In the current release of IMS, applications that have no update intent on data bases will

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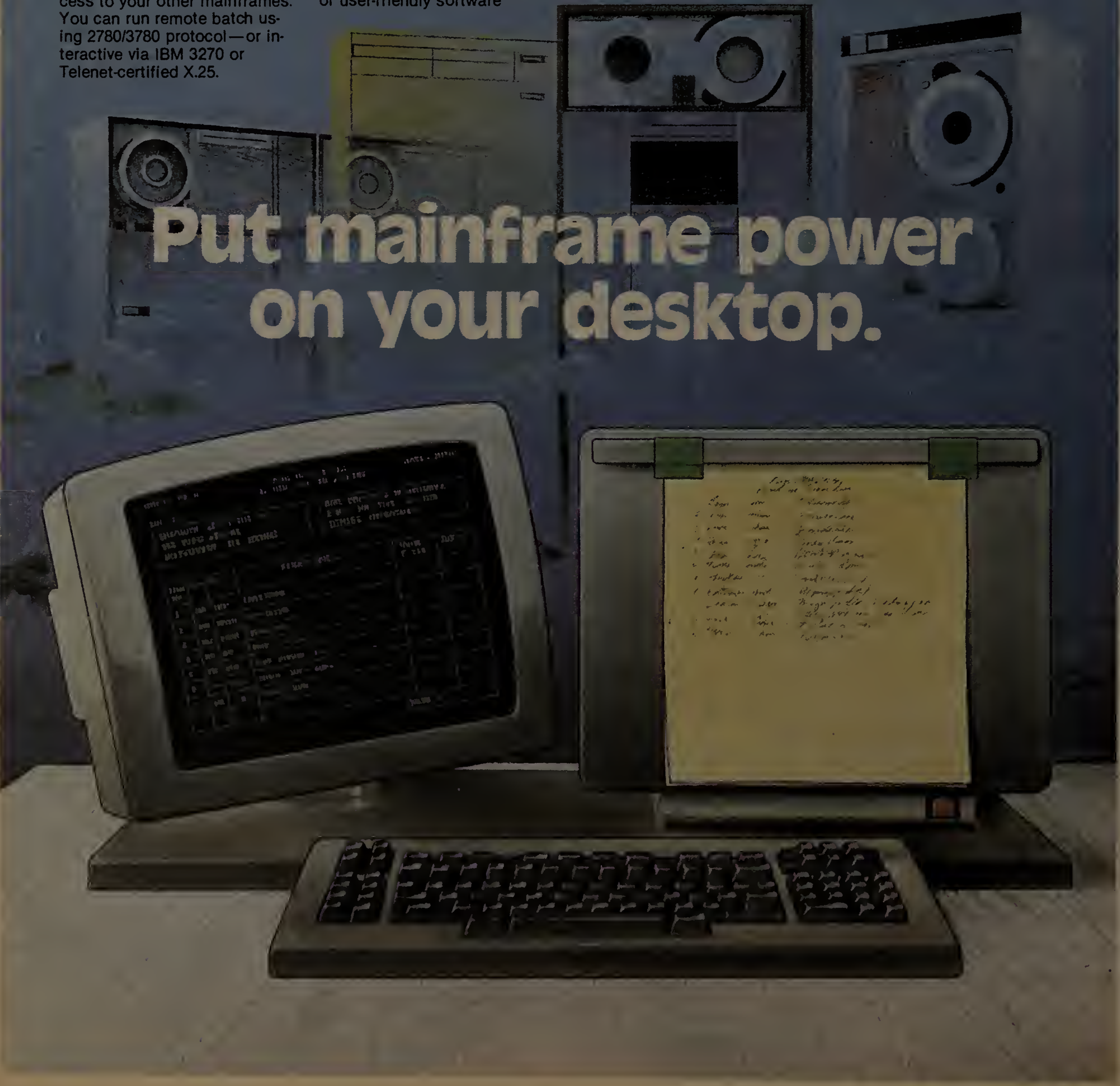

open them for input.

This means that you can achieve data sharing at the data base level without the DBRC feature, provided your data bases are Vsam. By specifying Vsam Shareoptions of 1 or 2, you ensure a maximum of one updater for the data base on a given processor. Other users would be read-only and the read would be without integrity. Note that in the case of Osam data bases, there are no Shareoptions to guard against the scheduling of multiple updaters.

This leads to a serious exposure of data integrity. It is recommended that DBRC be used to achieve sharing at the data base level. For the price, it not only ensures you of data integrity, but offers an excellent utility for controlling your backup and recovery procedures.

```
DBDGENS

           DBD NAME=HIDMINDX,ACCESS=(INDEX,ISAM)
           DATASET DD1=ISAM1,OVFLW=OSAM1,DEVICE=3350
           .
           .
           END

                  Note:  ISAM1 = Data Set Number 1
                         OSAM1 = Data Set Number 2

           DBD NAME=HISMDATA,ACCESS=(HISAM,ISAM)
           DATASET DD1=ISAM2,OVFLW=OSAM2,DEVICE=3350
           .
           .
           END

                  Note: ISAM2 = Data Set Number 1
                        OSAM2 = Data Set Number 2

    //DFSVSAMP  DD  *
       IOBF=(2048,4,Y,Y,SPL1)
        DBD=HIDMINDX(1,SPL1)
        DBD=HIDMINDX(2,SPL1)
       .            ^
       .            \___________Data Set Number
       IOBF=(1024,6,N,N,SPL2)
        DBD=HISMDATA(1,SPL2)
        DBD=HISMDATA(2,SPL2)
       .
       .
    /*
```

Figure 5. Relationship Between the DBDGEN and the Contents of the DFSVSAMP Data Set

Isam/Osam Multiple Subpool Support. Another feature of IMS 1.2 is the ability to have multiple Isam/Osam buffer subpools of the same size. Furthermore, these subpools may be assigned to specific data set groups for specific data bases.

This is accomplished by coding a new DBD statement in the DFSVSAMP data set which associates a data set number in a particular DBD with a four-character subpool ID. The same subpool ID is now also coded in the IOBF statement. This causes the subpool defined in that IOBF statement to be used for the named data set group. The data set number is determined by sequentially numbering all DD1, DD2 and OVFLW parameters that appear in all Dataset statements. See Figure 5 for an example.

This will give the user the ability to dedicate certain subpools to a Hidam primary index, for instance. If the index consists of a relatively low number of blocks, a large portion of the index may be kept in virtual storage at all times. This will reduce the number of I/Os necessary to access a root of the data base. Similarly, a specific subpool may be assigned to a data base that is to be processed by a BMP.

Cross Memory Local Storage Option. In Release 1.1.6 of IMS, the Local Storage Option (LSO) was introduced. This allowed for the movement of approximately 200K of IMS/VS modules from the Common Service Area (CSA) to the private area of the IMS control region. In addition, some specific buffers and work areas were moved from CSA to the control region. For those installations that were short on CSA, this provided much needed relief.

A problem that occurred with this was an increased path length for every DL/1 call due to an ISWITCH macro that is used to transfer control from the dependent region TCB to the control region TCB and back when the call is completed. Parallel DL/1 is still active as the control region contains a TCB for each dependent region. With IMS 1.2, parallel DL/1 is still provided but, by using Cross Memory Services of MVS/SP Release 2, the switch from the dependent region TCB to the control region TCB is eliminated.

Cross Memory LSO uses the advantages of the Cross Memory Services feature, which allows execution of code in another address space with-

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out having to switch to the other address space. Cross Memory LSO provides the same relief for CSA as vanilla LSO under 1.1.6 but without the additional overhead for parallel DL/1.

The Cross Memory Services feature of MVS/SP 2 is simulated in the 370/158 and 168, and performance will be degraded as compared with a 30 series processor. The Data Facility/Device Support program product and Data Facility/Extended Functions program product are prerequisites for Cross Memory LSO.

In Summary

Increased flexibility and enhanced data integrity seem to be the predominant characteristics of IMS 1.2. The Data Sharing feature is the one that goes the furthest in demonstrating these qualities. IMS on-line systems are staying up a longer and longer portion of the 24-hour day. Multiple shift operations and networks that service all four continental time zones are the primary reasons for this. Data Sharing makes the size of the traditional batch window less important.

The disappointing aspect of Data Sharing, at least at the block level, is the amount of system resources that will be consumed. Not only are ACF/Vtam and MSNF required to be running in each CPU, but an IRLM, each in its own address space, is also required in both processors. The additional region size for DBRC is estimated by IBM to be 330K bytes in batch and 430K bytes in the on-line control region. If you thought IMS was a resource hog before, Data Sharing is not going to do much to improve your opinion.

Also contributing to flexibility is the new shared printer support. This is something that CICS/VS has had for a long time, and it is about time IMS jumped on the bandwagon. At the very least, there are many shops that wish to share a printer between a test and production system.

I personally find that the 3375 and 3380 are exciting in their performance and the decreased amount of data center resources they consume. Use of these devices on an I/O-bound IMS system is bound to improve performance. I wonder, however, how many 158 and 168 users will be willing to install an extra-cost feature (Speed Matching Buffer) on their 3880 in order to use the 3380 at one-half its maximum data transfer rate.

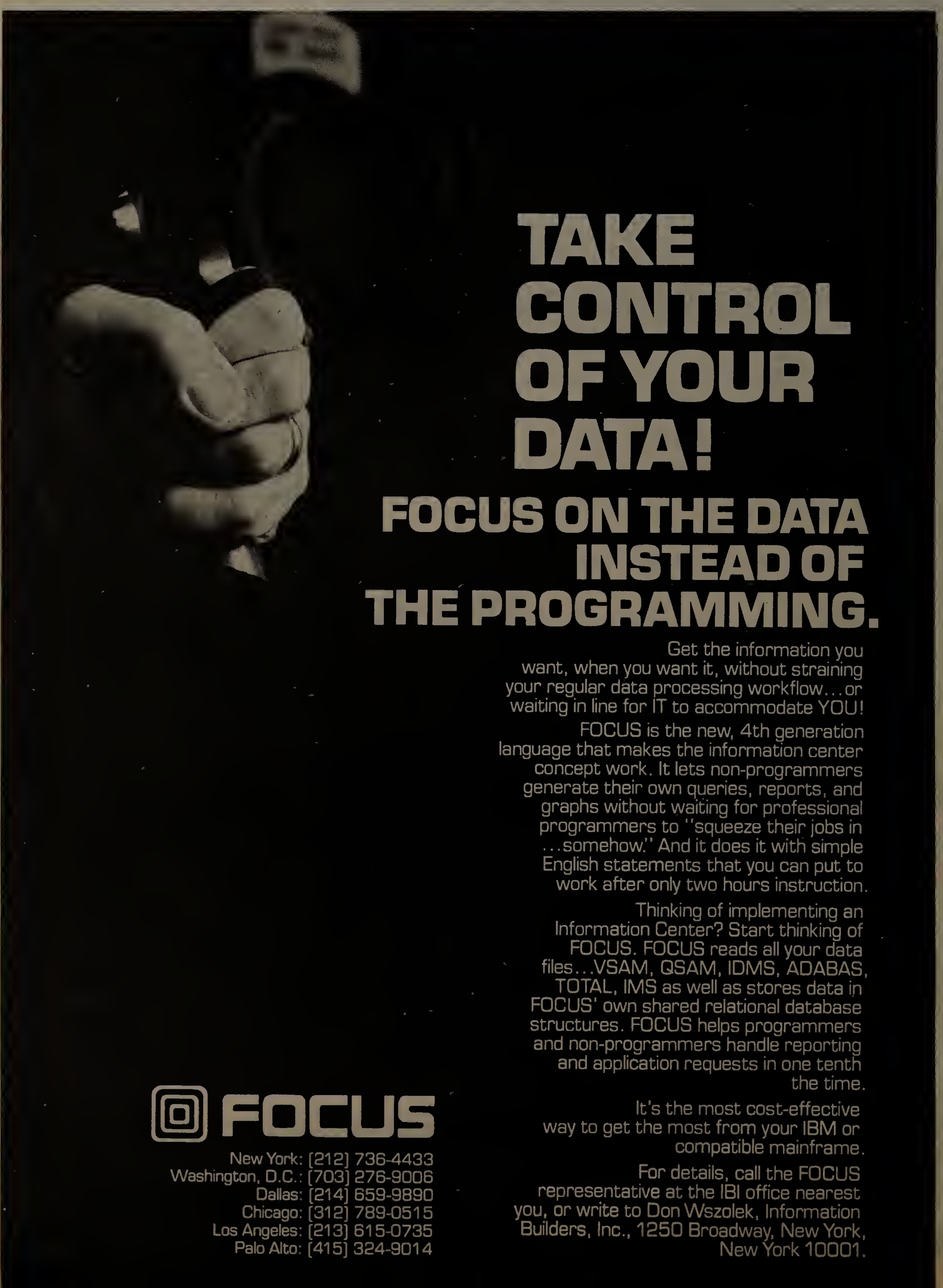
The enhancements to Program Isolation, Isam/Osam Buffer Subpools and Cross Memory LOS all serve to further the performance of IMS. The additional support for color printers is a nicety. In the final analysis, however, IMS always has been and still is a system whose forte is data integrity.

About the Author

Irwin Konopolsky is a product manager for On-Line Software International (OSI) of River Edge, N.J. He coordinates the efforts of software development, sales and promotion for Datavantage, an IMS data base productivity aid that assists the data base administrator or testing control group in creating and managing complex test data base environments.

Konopolsky joined OSI last year as a senior systems consultant responsible for installations, performance and tuning of IMS systems. Previously, he worked with IBM as a systems engineer in customer technical support at the New York Media Branch Office and as an IMS systems programmer in the Data Processing Division. He also spent seven years teaching high school mathematics in New York.

Konopolsky received his bachelor's degree in mathematics at the City College of New York in 1970 and a master's degree in mathematics education at the Richmond College of City University in New York in 1973.



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THE INFORMATION CENTER

Take a good look — a long, hard look — at the current state of your data processing department. Is there a programming backlog of anywhere from three months to six years? Is 50% to 70% of the backlog program maintenance? Is 40% ad hoc, one-time report generators? Do you find yourself deciding not to turn in a program request because of the poor turnaround? (MIT's Sloan School of Management estimates this "invisible backlog" to be three times as long as the visible backlog.)

Is programmer attrition a problem because of the ratio between maintenance work and more "demanding" program development? Are relations between the DP department and the users of its services getting poorer and poorer by the minute?

If you are experiencing any or all of these problems, you're in good company.

In the mid-'70s, IBM Canada reached the point where these issues had become a major concern. A task force assigned to the problem came up with a brilliantly simple solution: Assign a group of "consultants" from the data processing department to train end users to perform the simpler programming tasks themselves, using the nonprocedural language packages currently on the market.

The company started such an "information center," its popularity grew (both inside and outside the company), and by the end of 1981 the idea had spread to several major corporations in both Canada and the U.S.

Conceptually, the information center is simple: Several programmer/analysts (proficient not only with nonprocedural languages, but in working and communicating with users as well) staff a centrally located facility where users can receive:

- Assistance with *no* DP jargon.
- Education in the use of user-friendly tools.
- Administrative support (in obtaining passwords, logon IDs and so on).
- Help in obtaining access to data, recovering data and archiving data.
- Assistance in debugging "programs."
- Ready access to reference materials.
- Ready access to keyboard/display stations, printers and plotters.

The information center staff does no programming for the user, but does provide assistance.

The reasons to move to the information center concept are the same as those noted by proponents of office automation, decision support systems (DSS) and other forms of information decentralization. During this century, industrial productivity has increased approximately 90%, while office productivity has climbed only about 4%.

The office of today has got to automate, but cannot afford to operate with complex languages such as JCL, Cobol and PL/I. These procedural languages require a structured approach to program development, which means that an extended period of development time is spent in the specification and specification review process. In addition, these languages require programming expertise, a commodity that is fast falling behind the growing wave of programming requests.

But while the programming backlog has grown, the cost of computing hardware has dropped by a factor of 10, and programming languages are four times as productive as they were five years ago. Thus, the means are available now for the executive to obtain the vital, accurate information he requires for making informed decisions. It will be years, though, before this kind of technology reaches the office if we continue to depend solely on program development with procedural languages.

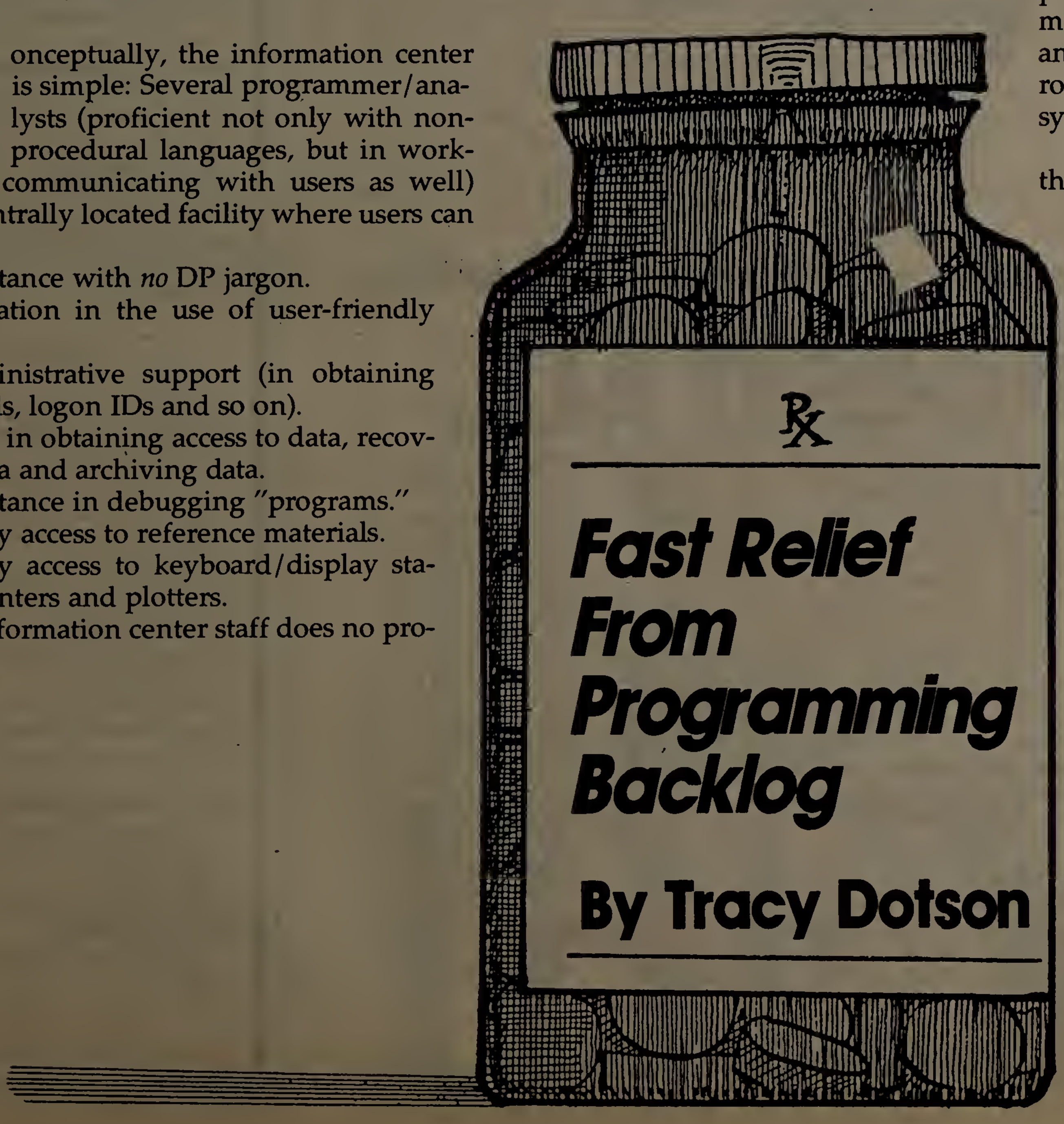
Why involve end users? Simply because the end user knows his job better than anyone else. In the time it takes a person just to explain to a systems analyst exactly what he needs, in detail, he could have developed his own application "program" using one of the powerful, nonprocedural languages.

Nonprocedural languages are user-oriented packages that develop programs and routines from simple, easy-to-remember commands. Figure 1 on In Depth/22 compares the steps involved in the development of an application program using procedural languages (such as Cobol, PL/I or JCL) with steps involved in developing an application program interactively, using nonprocedural languages. Besides inordinate delay, the structured approach also requires that the specifications be frozen early in the development cycle.

For those skeptics who argue that the debugging period for end users would be several times as long as that for DP programmers, take note: Studies have shown that only a small percentage of bugs are related to coding — almost 64% of program debugs occur in design and analysis. With end-user programming, errors in interpretation between the user and a systems analyst are eliminated.

There are more reasons, though, to involve the user in application development. Many times, users do not really know what they are looking for until they find it. Systems analysts and applications programmers cannot be involved in a piecemeal design process that requires constant variations on processing and output formats.

But if users are able to communicate with the system interactively (on-line) they can receive the information quickly, analyze it and then readjust the parameters to receive even more pertinent information. With nonprocedural, interactive languages, users



Fast Relief From Programming Backlog

By Tracy Dotson

DP Structured Approach	End User (Nonstructured)
Feasibility Study	Development
Preliminary Design	Debug
Analysis	(Documentation)
Design Revision	Maintenance
Development	
Test	
Review	
Revision	
Validation	
Approval	
Maintenance	

Figure 1. Differences in Application Development Between the Use of Procedural and Nonprocedural Languages

can begin to modify processing and output formats almost immediately.

Users also have a better understanding of how certain reports should be structured, what graphs are more appropriate and what information should be highlighted.

In addition, many information requests cannot be anticipated. Since the management environment is so volatile, issues and direction can change drastically without warning. To keep pace, managers need vital, valid information (not raw data), and they usually needed it yesterday. Application routines that can be designed quickly and kept up to date can provide this vital information; and maintenance of this information can be continuous, since maintenance is also performed interactively.

With the new system of user application development promoted by the information center, the user takes on new responsibilities: the development of applications, application documentation (if any, most packages are self-documenting), application maintenance and financial justification.

Application Routines

The new nonprocedural software packages are targeted for various user operation areas:

- Languages to build systems.
- Professional model-building packages.
- Statistical packages.
- Languages for financial analysis.
- Programs for selecting data.
- Word processing packages.
- Graphics packages.

No one software package performs all these tasks in the most complete or effi-

Languages to Build Systems
- Focus (Information Builders, Inc.)
- Ramis II (Mathematica, Inc.)
- Mapper (Sperry Univac)

Model-Building Packages
- APL
- A Departmental Reporting System (IBM)

Statistical Packages
- SAS (SAS Institute, Inc.)
- APL Advanced Statistical Library (IBM)

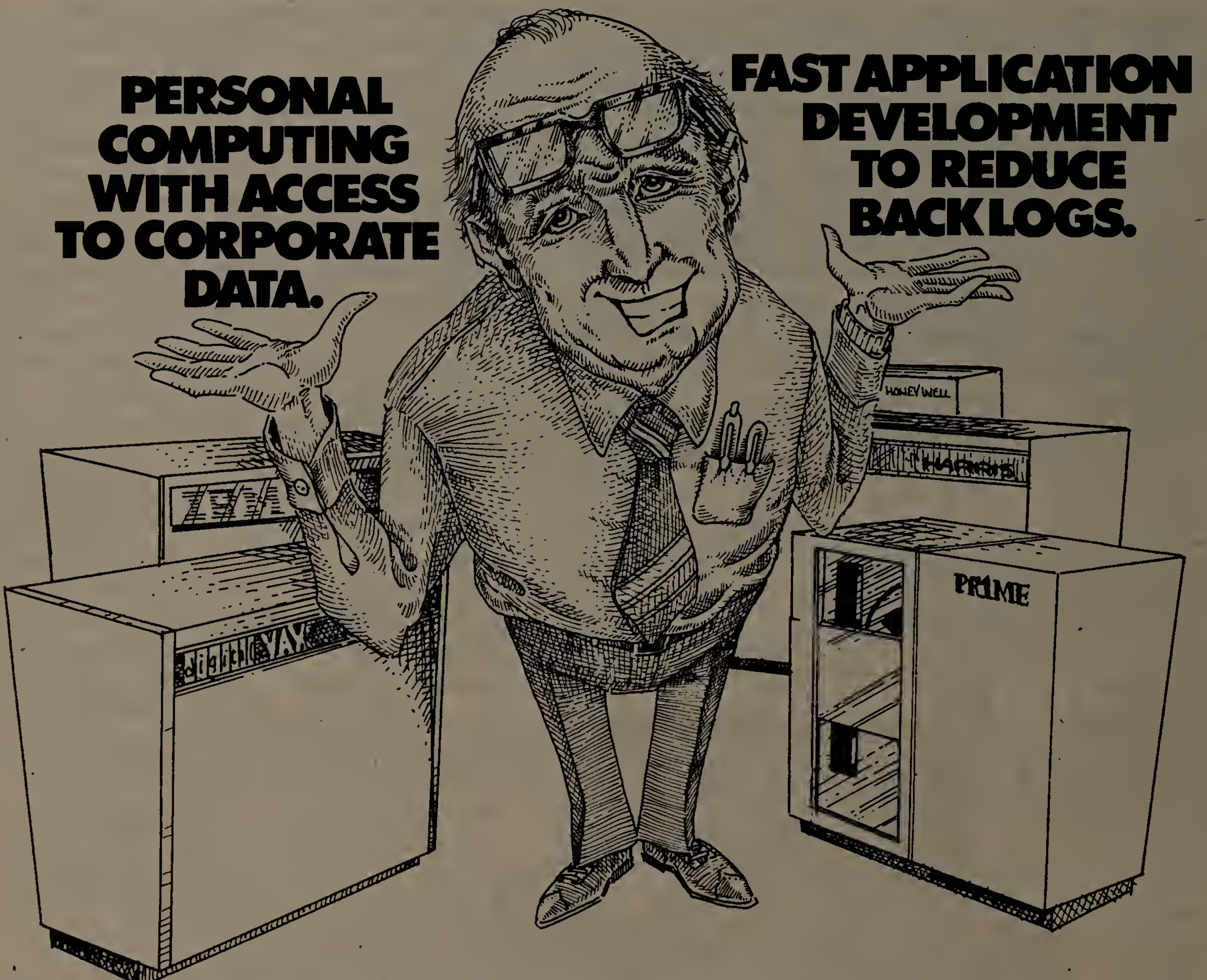
Languages for Financial Analysis
- Financial Planning System (IBM)
- Financial Analysis and Credit Evaluation (IBM)
- Plancode/1 (IBM)
- Long-Term Debt Managing System (IBM)

Programs for Selecting Data
- Query by Example (IBM)
- Focus
- Ramis (Mathematica, Inc.)
- A Departmental Reporting System
- APL Data Interface (IBM)
- Stairs (IBM)
- Structured Query Language (IBM)
- Intellect (Software Intelligence Laboratories, Inc.)
- Online English (Cullinane Database Systems, Inc.)
- Qwick Query (CACI, Inc.)
- Easytrieve (Pansophic Systems, Inc.)
- ASI/Inquiry (Applications Software, Inc.)

Text Processing and Report Writing
- Document Composing Facility (IBM)
- APL Text Editor and Composer (IBM)
- Qwick Query
- Nomad (National CSS, Inc.)

Graphics Packages
- SAS-Graph (SAS Institute, Inc.)
- Focus
- Panel (IBM)

Figure 2. A Sample of Currently Available Nonprocedural Packages



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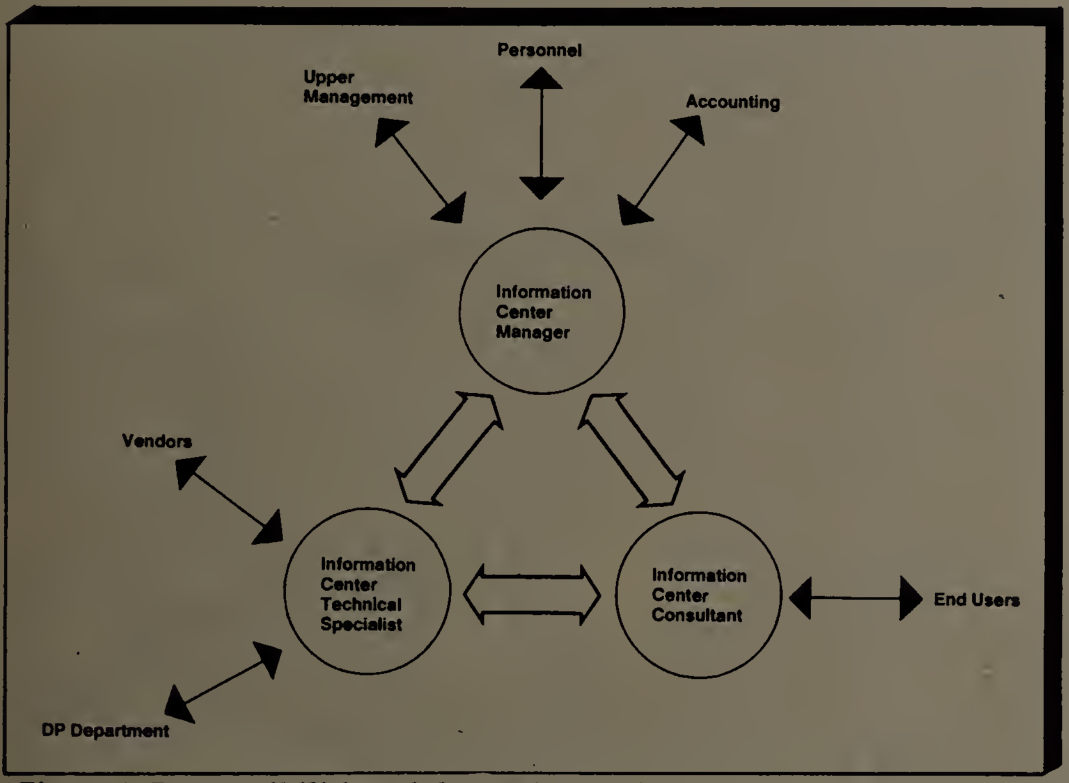
Personnel
Upper Management
Accounting
Information Center Manager
Vendors
Information Center Technical Specialist
Information Center Consultant
End Users
DP Department

Figure 3. Responsibilities of the Various Information Center Personnel

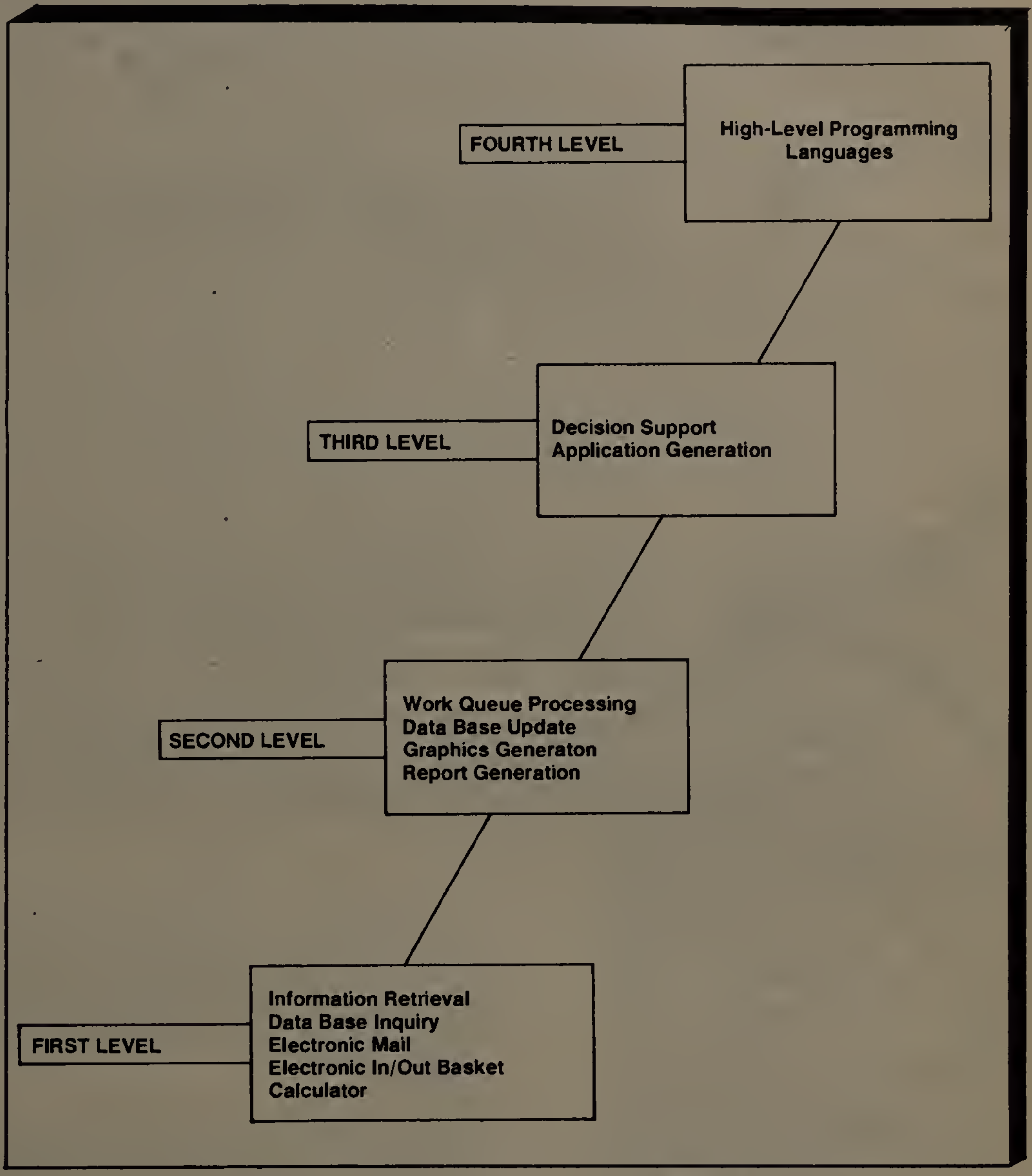

Figure 4. The Four Levels of Sophistication

cient way. A major responsibility of the information center staff is to pick and choose the most appropriate packages and then combine them into one menu-based system so that users do not have to learn five or six different sets of mnemonics.

Clerical, Management Jobs

The information center system is composed of several subsystems that perform various clerical and management tasks. Each subsystem is composed of one or more purchased software packages.

Decision support systems are routines that monitor transactions for deviances in specific standards. These systems also condense transaction data into easily understood formats for quick managerial evaluation. *Information managing* concerns the organization of information for quick retrieval. Studies estimate that today's executive spends 15% of a day's time pulling information from files.

Personal computing systems analyze, compare and consolidate data, creating forecasts and meaningful project plans. *Report writers* are packages that combine text processing, calculator functions and graphics capability to produce crisp, clear reports and presentations quickly. *Organization support systems* are involved with the more basic office tasks of text processing, electronic mail, "to-do" lists and electronic in/out baskets.

Though Figure 2 (on In Depth/22) gives examples of some nonprocedural software packages, it is not important here to list the various packages that are available. There are more than 100 available now, providing a multitude of services, and many more are on the way. The important idea to remember is that many packages can be joined or merged to supplement or complement one another.

The information center personnel have three basic responsibilities: to teach, to market and to evaluate. These duties are divided between the three information center roles: consultant, technical specialist and information center manager. Figure 3 illustrates the responsibilities associated with each role.

The most important responsibility of an information center consultant is to teach. The information consultant has to be technically knowledgeable, but more important, must also enjoy working with users. The consultant must possess an unusually large amount of patience and be able to communicate well with people without using DP jargon. The consultant does not program for the user, but does provide any assistance that might be needed to develop application routines.

This is a major point to remember — information center consultants do *not* program for the user, only consult and assist.

The information consultant will also help with administrative chores such as finding a station, getting a logon ID and password, obtaining authorization for the user to retrieve or change data, arranging for processing time charges and so on. The consultant also provides assistance in choosing packages for particular routines and in solving debug problems.

The information center technical specialist coordinates the more complex application interface with access methods, outside data sources and so on. In addition, the specialist is involved in

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Domain Processing

```
      CHARACTER*2  ITYP
      REAL       STIFF , SPAC1 , SPAC2
C
      COMPLEX A(NSIZ,NSIZ)
      INTEGER IMM(NSIZC),IM(NSIZC)
      COMPLEX CC
      DO 10 I=1,NORD
        IM
10    CON
      DO 5
        C=
        DO
```

```
C CARD MUST BE INSERTED BEFORE THE FIRST LINE OF EACH OF THE JUST-NAM
C ROUTINES.
C
C
%include '/spice/common.ins.ftn'
        DIMENSION ACCTIT(4)
        DIMENSION REMAIN(4)
        DATA AMRJE /4HMRJE/
        DATA ABLNK /1H  /
        DATA ACCTIT / 8HJOB STAT, 8HISTICS S, 8HUMMARY  , 8H        /
        DATA AHDR1,AHDR2,AHDR3 / 8H  SPICE ,8H2G.10(18,8HJUL81)  /
C
C
CA          CALL ASSIGN(1,IKEY)
        IPOSTP=0
C       CALL ERRSET(208,256,-1,1,1,0)
        MAXMEM=10000000
        MAXTIM=1E8
        ICOST=0
        IOFILE=7
C
C OPEN INPUT
```

```
$ cad.structure
```

```
Edit File: //phoebe/cadware/core.pas
```

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Processing Alternatives

	BATCH	TIMESHARING	DOMAIN PROCESSING
Type	Large mainframe (e.g. Cray)	32-bit supermini (e.g. VAX)	Networks of dedicated high performance computers (Only Apollo)
Typical Use	Very large computations	Interactive, real-time	Interactive and large-scale computations
Applications	Very heavy CPU-cycle applications	Multi-user, low to medium CPU cycle applications	Any number of users in heavy CPU-cycle graphics intensive applications
Typical Entry Cost	$3,000,000 to $8,000,000	$150,000–$300,000	$35,000–$50,000
Incremental processor cost	$3,000,000 to $8,000,000	$150,000–$300,000	$25,000–$50,000

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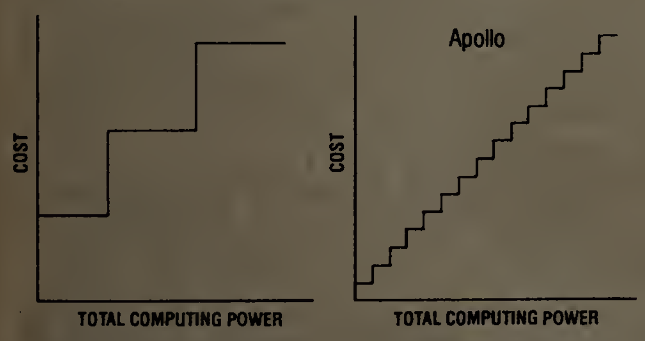
Each user's Domain system node has a 32-bit processor, 16 Mbytes of virtual address space, and up to 3.5 Mbytes of high-speed physical memory. That means you can run very large, single-program applications such as NASTRAN, circuit design simulations, architectural/electrical construction applications and many others. Or, with Domain's inter-process communications, you can run multiple program applications. Or, you can configure an entire network for running in a distributed multiprocessing way.

Growth Costs



Domain Processing reduces your initial system cost by allowing you to install only the computing power you need. Larger systems typically force you to buy expensive and wasteful excess capacity. A Domain Processing network is expanded in cost effective, manageable increments. With a large system, expansion usually means adding another expensive processor.

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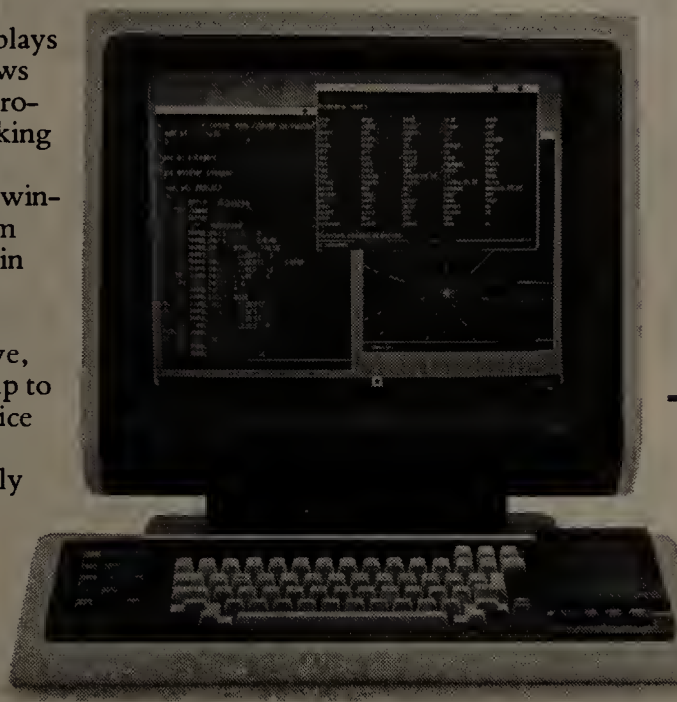

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constantly reviewing new software products and incorporating newly purchased software packages into the information center system.

The information center manager is responsible for monitoring the center and marketing the center to user departments and management, as well as performing basic administrative functions.

If teaching is the most important responsibility of the information center, marketing is definitely second in importance. Users must be encouraged to try out the service and shown how it will improve operations in their area. Users must also receive the assistance necessary to guarantee that their first experience with user application development is pleasant and successful.

Varieties of Training

The center offers training situations to meet many different requirements. Center personnel can provide one-on-one training (with the user sitting at a station, working interactively with the system), classroom training (one-half to 1½ days in length) and self-study (using audio-visual materials and an interactive instructional system). The major intent of instruction in the information center is to have the user become so familiar with using the system that it becomes second nature. The process is much like learning how to use a phone. Once you learn the basic dialing procedures, the basic codes and the sources of information, the "how" becomes insignificant; the "what" is suddenly most important. You can become creative.

The software packages and the training necessary to use the software are broken into four levels of "sophistication." Figure 4 (on In Depth/23) illustrates these four levels.

The first level is involved with an introduction to the keyboard/display station and the most basic processing tasks: information retrieval, data base inquiry, electronic mail, electronic in/out basket and calculator functions. The second level concerns work queue processing, data base update, graphics generation and report generation. Almost all office automation systems are concerned with these first two levels of sophistication.

The third and fourth levels are concerned with the more complex tasks required of "informed decision making." Level three introduces the user to decision support services and application generation. Truly ambitious users who require complicated information processing are introduced to high-level procedural programming languages in the fourth level of instruction.

While an introduction to the system is necessary for all users, it is not necessary that all users progress through these four levels of sophistication in order. Certain users may require decision support or data base inquiry processing and not the more basic functions.

Interface With DP

There are two schools of thought concerning the information center's relationship to the data processing department.

Some organizations went to the information center format only as a way to consolidate the user groups that had already begun to bypass DP. These groups were fed up with the delays, the low priority status of their requests and the lengthy design periods. They decided to handle their programming chores themselves, either purchasing their own equipment and programmers outright or contracting with outside time-sharing and/or programming services.

For these organizations, the information center acts as an "association," training its members, maintaining standards and protecting the user network against infiltration from the data processing department.

Though their animosity may be well founded, a perpetuation of this "separatist" attitude cannot be healthy for the corporation in the long run.

User application development must be coordinated with DP to maintain data integrity and security, to preserve transaction processing time and to streamline expenses. The information center is the best means of engineering and sustaining this cooperation and, at the same time, preventing a jealous DP department from stifling end-user enthusiasm.

To accomplish both tasks, the information center should be designed so that its manager reports on the same level as the DP manager.

Author James Martin discusses the importance of this organization in the latest edition of *Application Development Without Programmers*:

"The manager of conventional development may feel attacked and in danger of losing his empire. His rival running the information center appears like a hero, and he does not. He may argue against the new methods. Great opposition is sometimes encountered to the setting up of, or expansion of, information center operation.

". . . The solution to the rivalry lies in good overall DP management by an executive whom both the information center manager and the manager of conventional DP report to."

Figure 5 illustrates such an arrangement, though the actual structure will vary in every company.

Even though the information center operates autonomously, close ties have to remain between the information center and the data processing department to ensure compliance with corporate goals, the perpetuation of data base management rather than a digression to file management and coordination for user applications that require complex processing.

DP and the information center must also work together to maintain control of the availability, storage, backup/recovery, security and appropriate organization of data.

The entry of user application development into the overall processing

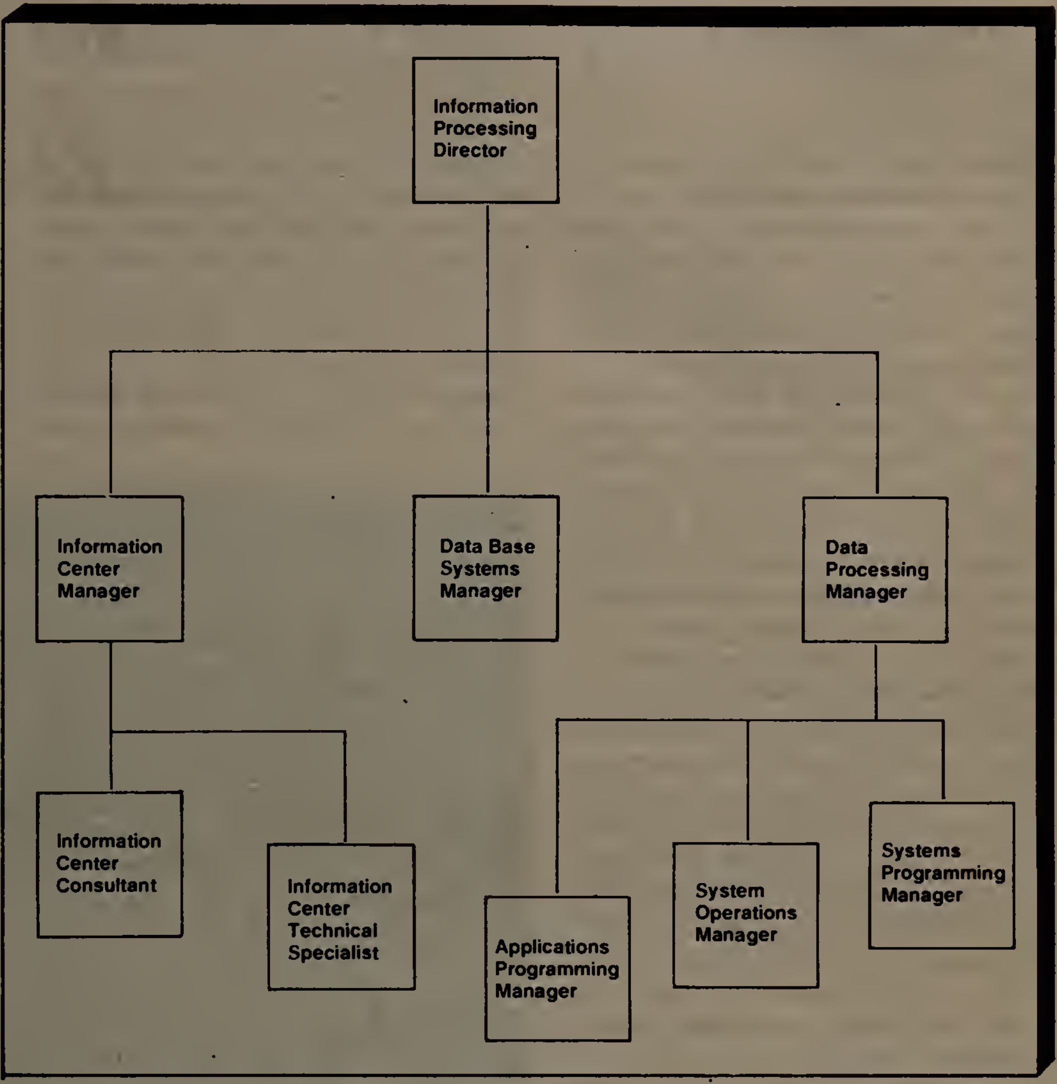
Information Processing Director
Information Center Manager
Data Base Systems Manager
Data Processing Manager
Information Center Consultant
Information Center Technical Specialist
Applications Programming Manager
System Operations Manager
Systems Programming Manager

Figure 5. Sample Organizational Chart Including the Information Center

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VT100 DECscope	$ 1595	99
VT18X Personal Computing Option	2395	198
VT101 DECscope	1195	78
VT131 DECscope	1745	101
VT132 DECscope	1995	105
ADM 3A (dumb terminal)	595	56
ADM 5 (dumb with visual attributes)	645	59
ADM 31 (two page buffer)	1095	88
ADM 21 (full editing/visual attributes)	690	62
ADM 32 (ergonomic ADM 31)	*	90
ADM 36 (DEC system terminal)	*	90
ADM 42 (8-page buffer available)	*	150
Hazeltine Esprit	645	59
Hazeltine Executive 80 Model 20	1345	95
Hazeltine Executive 80 Model 30	1695	109
GRAPHICS TERMINALS		
VT100 (Tektronix 4010 emulation)	3250	195
VT125 (DEC ReGIS firmware)	3280	195
ADM 3A (Tektronix 4010 emulation)	1795	149
ADM 5 (Tektronix 4010 emulation)	1845	152
300 BAUD TELEPRINTERS		
LA 34-AA DECwriter IV	1095	78
LA 36 DECwriter II	1095	78
Diablo 630 RO	2295	152
Diablo 630 KSR	2695	175
Diablo 1650 KSR	2635	185
TI 743 (portable)	1190	96
TI 745 (port./built-in coupler)	1485	98
TI 765 (Port./bubble/ b-i coupler)	2595	174
600 BAUD TELEPRINTERS		
Epson MX-80	645	n.a.
TI 825 KSR impact	1570	104
TI 825 KSR pkg.	1795	125

1200 BAUD TELEPRINTERS	MTI Price	12 mo. Lease
Epson MX-100	$ 895	n.a.
LA 120 RA (receive only)	2095	137
LA 120 AA DECwriter III	2295	147
TI 783 (portable)	1645	115
TI 785 (port./built-in coupler)	2270	135
TI 787 (port./internal modem)	2595	155
TI 810 RO impact	1545	99
TI 810 RO pkg.	1795	107
TI 820 RO impact	1850	120
TI 820 RO pkg.	2025	129
TI 820 KSR impact	2025	129
TI 820 KSR pkg.	2195	137
Lear Siegler 310 ballistic	1945	144
2400 BAUD		
Dataproducts M 200 (2400 baud)	2910	198
DATAPRODUCTS LINE PRINTERS		
B300 (300 lpm Band Printer)	5455	426
B600 (600 lpm Band Printer)	6930	510
81000 (1000 lpm Band Printer)	11330	*
BP1500 (1500lpm Band Printer)	19700	*
(Controllers available for most minis & micros)		
ACOUSTIC COUPLERS		
A/J A242-A (300 baud orig.)	242	16
A/J 247 (300 baud orig.)	315	20
Vadic VA 3413 (300/1200 orig.)	845	54
Vadic VA 3434 (1200 baud orig.)	845	54
MODEMS		
GDC 103A3 (300 baud Bell)	395	30
GDC 202S/T (1200 baud Bell)	565	49
VA 3212 (Bell 212A comp.)	825	54
VA 3451 (orig./ans. triple modem)	885	54
VA 3455 (1200 baud orig./ans.)	770	54
VA 2450 (Bell 201 comp.)	725	54
VA 103 (300 baud modemphone)	235	19

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system requires structuring data into three groups: private user data, public purchased data and protected organization data.

- **Private user data** is that data entered, maintained and owned by the user. Users require that ample space be provided for storing this data, and security procedures should be designed so that private data cannot be accessed by unauthorized users.
- **Public purchased data** includes state credit bureau information, stock exchange reports, census information and the like. Besides purchasing the appropriate services, DP and the information center must ensure that access to the data remains standard throughout the corporation for efficiency and for auditing purposes..
- **Protected organization data** is the vital business data that makes the operation of that particular corporation possible. The user is concerned with the data's stability (when comparing current data with historical data), the amount of data accessed (usually only a small subset of corporate data is used at any one time) and the control of the data (the user does not want the data to disappear before it has been used).

The DP department has important data considerations of its own. Corporate data must be organized so that access to data does not adversely affect response time for on-line, transaction-driven systems. This means that end-user queries should not be allowed to interfere with on-line business transactions. The confidentiality of sensitive company information and the integrity of the operational base must also be protected by the DP department. The information center and the DP department must establish access rules, data ownership determinables, data privacy guards and means for evaluating the sensitivity of company information.

Obviously, when end users become involved in application development, someone must be responsible for monitoring and controlling end-user access to data and processing. This is a major function of the information center, and this is why close ties to DP are so important.

Totaling the Costs

The costs of establishing an information center can be broken down into four categories: hardware, facilities, software and people.

The hardware requirements include DP and telecommunications equipment, training equipment, reference materials and furniture. Since the user application development/office automation system is interactive, several keyboard/display stations should be available for use. CRT terminals should also be placed in areas for staff use, user/staff training and walk-in use. Sufficient printing and plotting equipment should be available, as well as telephone equipment for both staff and users. Furniture in the center should include large "debug" tables that will allow users to spread out sets of forms for comparison.

The information center should also house all reference material that is necessary to use the system and interface with other DP functions. Users should not have to search office-by-office or run to the corporate library for reference material. The entire center should be geared for "hands-on" use.

The center itself should be located central to the users. Areas should be set aside for one-on-one instruction, classroom instruction, self-study, walk-in use and for private staff use. As with the establishment of the center itself, it is best to start small, then grow as the need arises.

With software, the important thing to remember is to buy prewritten packages. The center will never leave the drawing board if it requires a large amount of application programming (using procedural languages). The job of the information center technical specialist is not to reinvent the wheel, but to combine the selected software packages efficiently for use in the center. The information center staff should do *no* extended system or application programming.

Revenue Center

In most corporations, once the center has been outfitted and staffed, its operating expenses must be budgeted. Several corporations recommend

Some Users of the Information Center Concept

Allstate Insurance Companies
Bank of Montreal
Bank of Nova Scotia
Best Western
Blue Cross
Canadian Pacific Air
Confederation Life Insurance
Country Companies
Crown Life Insurance Co.
Fireman's Fund Insurance Companies
General Motors
Hallmark Cards, Inc.
Hertz Rent-a-Car
IBM Canada
Insurance Co. of North America
Eastman Kodak Co.
Litton Data Systems
Manufacturer's Hanover Trust
McDonald's Restaurants
Montgomery Ward
Southern Pacific Communications
Travelers Insurance Companies

Table 1

operating the information center as a revenue center in order to plan for and control growth. This method also reinforces the user's responsibility for financial justification of use and encourages staff to operate a service that remains valuable to users.

You could charge for actual use, but the reason for having the information center is to encourage users to become involved. The charge system chosen should be simple to understand, plan and budget.

Many centers charge a flat fee (such as $500 per month), similar to a simple charge-per-telephone fee. Others charge only for the most critical resources, such as CPU time, connect time and disk space. Another method is to alleviate money budgeting all together, allowing each user department a certain percentage of total computer time.

Getting Started

An important consideration in starting up an information center is that it must be accepted the first time. This includes both the overall pilot program as well as the initiation of each new user to the service.

Do not offer the information center as a way to unload DP. work onto users, but as a way of giving easy-to-use, powerful management tools to executives — allowing them to make informed decisions with current, vital information.

Managers who have begun their own information centers recommend starting small, with a pilot program.

As time-consuming as it may be, a considerable amount of planning is necessary. An information center task force should be organized to:

- Decide on information center plans and objectives.
- Determine the types of services to be offered in the pilot program.
- Establish an organization, staffing and staff advancement plan.
- Design, and appropriate money for, hardware and facilities.

Once the task force has completed its assignment, two or three people should be selected to staff the pilot center. As discussed earlier, the information center is staffed basically by consultants, technical specialists and a manager. Pilot information center programs may combine all of these roles into one or two people. Each staff member should possess communication and people-oriented skills as well as technical knowledge. In addition, these pioneer staffers should really want the job.

The second step is to select the target users. Only one or two end-user departments should be chosen for introduction to the pilot program. Again, those departments should be the ones that offer the best chance for immediate success. This means that each department selected should have a large amount of user-oriented jobs submitted on the programming backlog, but should also be staffed by people interested in end-user involvement.

Based on the target users' needs, the center staff can begin selecting and installing appropriate software packages, and as soon as possible, they should invite the selected users to a demonstration.

A six-month pilot program is recommended for those corporations

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experimenting with an information center. As interest in the center grows, the program should grow horizontally (adding more users) first, before services, equipment or staff are increased.

The six-month pilot program (using horizontal growth) allows for major changes in service with a minimum of cost. Do not get bogged down in preliminary planning and analysis. Get started and change the plan as you go.

Selling the Idea

Probably the most difficult task in establishing an information center is selling the idea to top executives. Do not offer the information center as a way to unload DP work onto users, but as a way of giving easy-to-use, powerful management tools to executives — allowing them to make informed decisions with current, vital information.

The information center also offers these benefits:

- A decrease in the cost to develop and maintain many application programs.
- Improved productivity of high-priced professionals.
- Extended management capabilities, especially in planning.
- Better relations between DP and the users of its services.
- Sudden responsiveness of computing to end-user needs.
- Reduction in development and maintenance costs of 30% to 50%.
- Better attitudes on the part of highly skilled programmers, since they are relieved of mundane tasks.
- Less stress on DP headcount figures.
- Better control of resources by DP than when circumvented by users.
- Excellent return on investment (IBM Canada quotes a $2 return on every $1 invested).

But, while mentioning these points will definitely grab the attention of the people upstairs, "seeing is believing." One of the most important functions of the pilot program, as seen by many center managers, is to operate as a demonstration center. In a videotape interview with James Martin, Jim Johnson (of the operations engineering staff at Equitable Life Assurance) discussed the importance of the information center as "demonstration center":

"A demonstration center is a prototype information center in which we have systems people put themselves in the shoes of their customers and say, 'What would my customer like to have in the way of an information center?' Now we have developed a whole set of applications, about 15 in all, of which we regularly present about six or eight. These demonstrations take about an hour to present. We bring people into a conference room with computer terminals and graphics terminals, some monitors and occasionally large screens and so on and just run through this series of presentations.

"We've given over 70 demonstrations. . . . The demonstration center is the primary tool for getting the word out."

Besides the initial justification for the pilot program, information center proponents are sometimes required to rejustify the infor-

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mation center concept again and again. To provide ammunition for this rejustification process, the information center staff must track user and usage statistics, changes in the programming backlog and changes in programmer productivity — as well as record any user comments and provide center demonstrations.

Since 1979, when the information center concept became public knowledge, its popularity has gradually taken hold. Table 1 (on In Depth/29) is a partial list of companies currently operating an information center in either the U.S. or Canada.

Final Notes

The move to the information center concept involves changes in the basic ways we envision data processing and DP management. Programming productivity in the '80s has become a management issue more than a technical issue. With the ratio of program development costs (structured development) to lifetime running costs nearing 127:1, a new method of software development has to be found.

The powerful, English-based (as opposed to jargon-based) packages that are currently available offer a solution to this programming problem, but the relief of the backlog is basically a short-term reward.

The long-term benefit that user application development (through training in the information center) offers is an end user who is comfortable with information processing — able to use it in day-to-day operations to increase efficiency and to improve the decision-making process.

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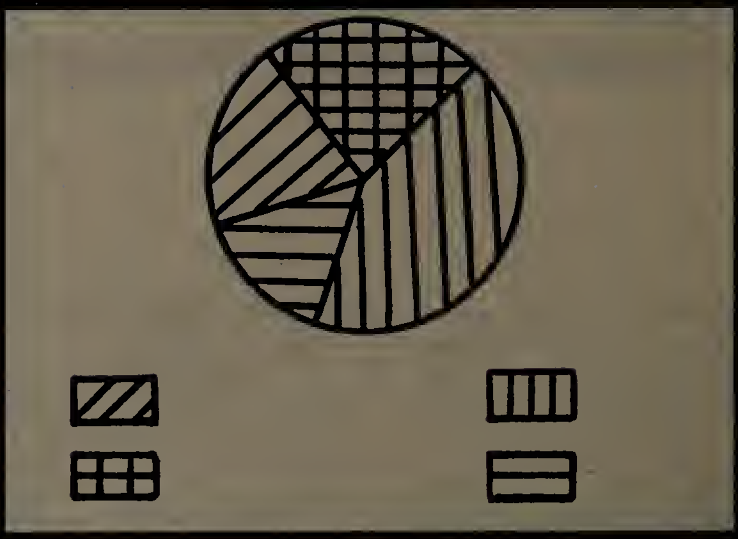

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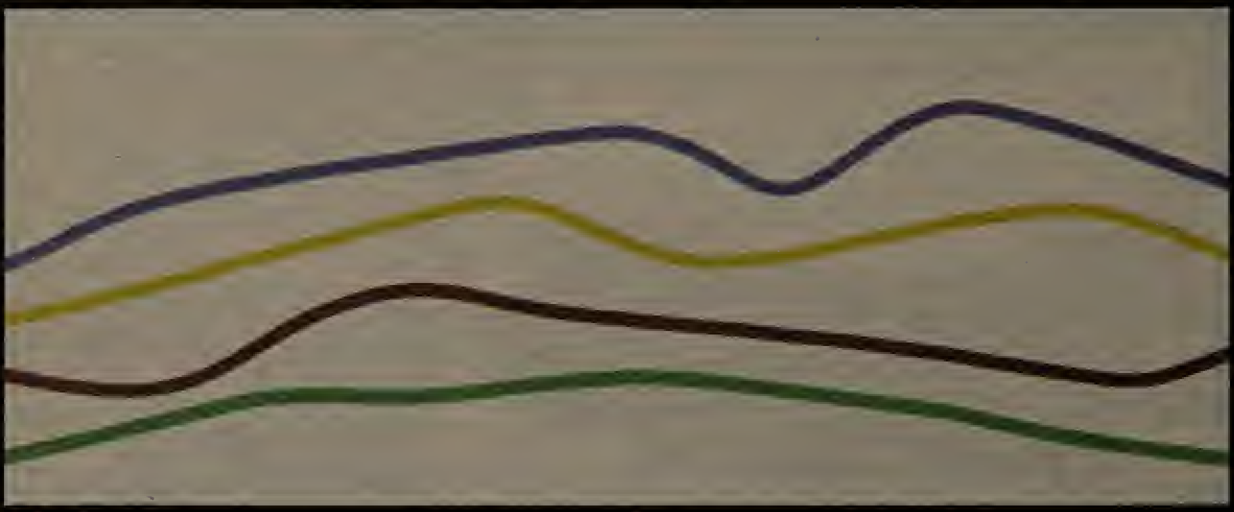

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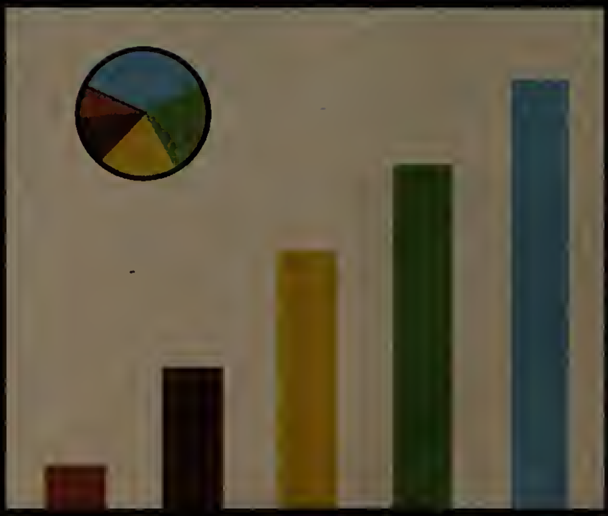

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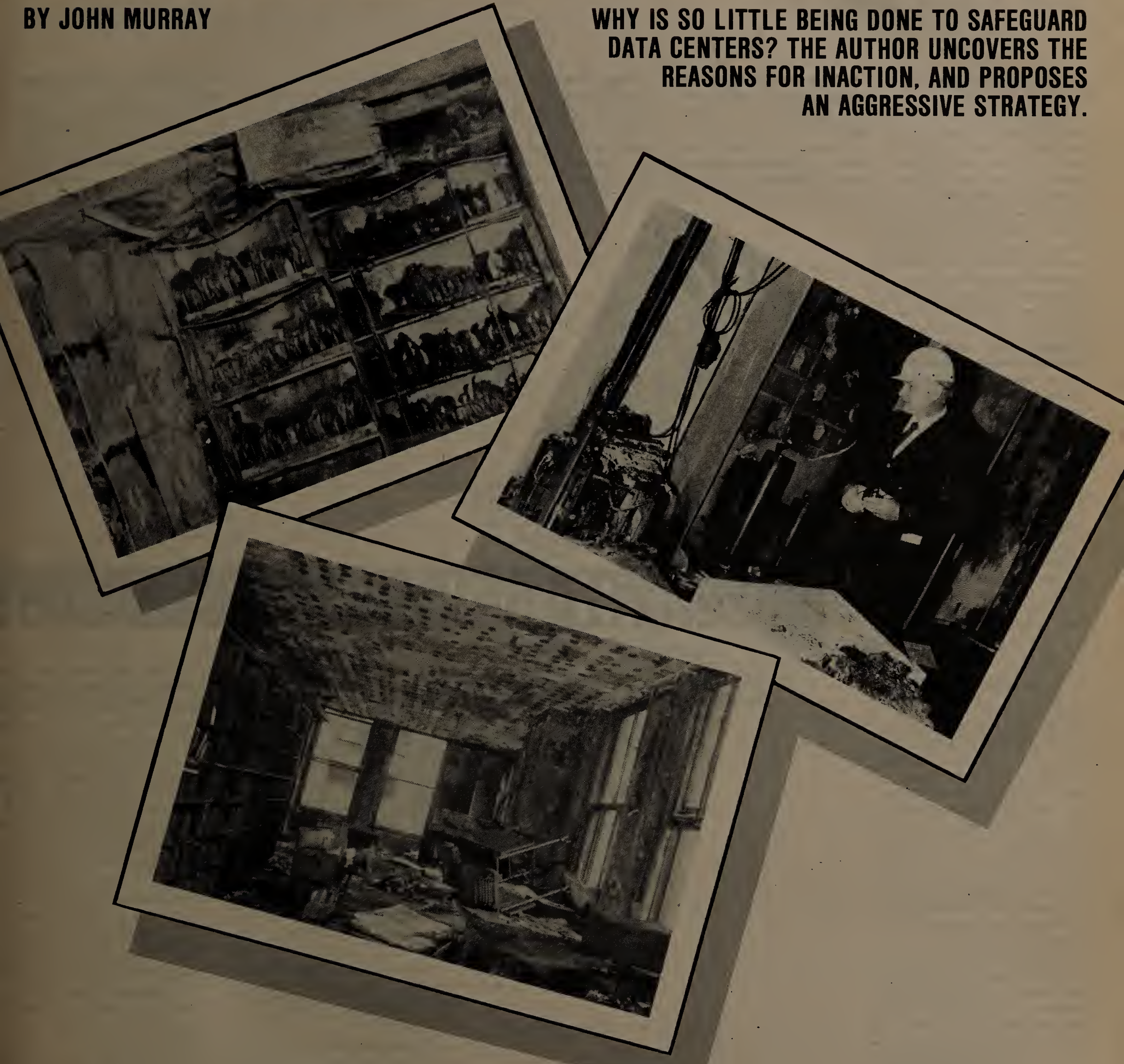
CONTINGENCY PLANNING

BY JOHN MURRAY

WHY IS SO LITTLE BEING DONE TO SAFEGUARD DATA CENTERS? THE AUTHOR UNCOVERS THE REASONS FOR INACTION, AND PROPOSES AN AGGRESSIVE STRATEGY.



Contingency planning. Everyone talks about it, but few contingency planning projects ever get off the drawing board. It would be safe to speculate that less than 10% of the nation's management information systems functions have comprehensive, regularly tested contingency plans.

Considering the high degree of vulnerability, not only to MIS but to the entire organization, the obvious question must be, "Why is so little being done?"

The answer may be traced to those who have direct responsibility for the development of ongoing contingency planning: the managers of the MIS function. For the most part, MIS managers have not pursued contingency planning as aggressively as they should.

When disaster strikes, a properly conceived contingency plan can mean a smooth, quick recovery, with minimal disruption of processing. For companies without such a plan, an MIS-related disaster can mean, at best, a long and painful reconstruction effort. At worst, it can mean a company's inability to continue as a viable organization.

If the requirement for contingency planning is so important and if the risk associated with poor or nonexistent contingency planning is so high, why is there such a lack of action?

There are several reasons. The first is the generally held belief that disasters always happen to someone else: "We have gotten along this far without a disaster plan. Why worry now?"

Another factor that works against contingency planning is the nature of the effort. The work involved is, to say the least, less than exciting. The design, implementation, testing and ongoing maintenance of a sound, effective contingency plan can be boring, and the required effort offers little in the way of challenge. A great deal of time and effort must be devoted to the development of a plan that will only demonstrate its value in the event of serious difficulty. The effort has hardly invited the enthusiastic embrace of MIS.

In addition, the typical MIS manager faces (or believes he faces) difficulty in selling the concept of contingency planning to senior management. Opening discussion of the time and money required to build and maintain a strong contingency plan with senior management is something many MIS managers face with trepidation, especially in organizations where the MIS expense is already considered excessive.

End-user disenchantment with MIS is widespread. If contingency planning funds are to be obtained by redirecting money from other, previously approved, projects or technical advances, the job of selling the contingency project is not likely to rate high among MIS management's priorities.

Regardless of the apparent objections to attacking the problem of contingency planning, and regardless of possible negative reactions on the part of senior management, the MIS manager has a clear responsibility to take aggressive action that will safeguard the organization.

The proposal for developing and implementing a contingency plan must be considered as important as any other MIS effort. The project requires an appropriate commitment of time and money. Unless the MIS manager is willing to build a strong case to secure the required support, consideration of effective contingency planning will be futile.

Development Process

The proposal for the development and implementation of a contingency plan must be based upon the same sound project development process that is used with any other MIS project. Appropriate management and control must be exercised. The requisite "homework" must be done, questions must be anticipated and, as far as possible, answered prior to presenting a formal request to senior management.

In order to prepare a strong presentation for senior management, the MIS manager must consider the specifics of the project: an MIS contingency preparedness review, design of the contingency plan, documentation of the plan and, finally, testing and ongoing maintenance of the plan.

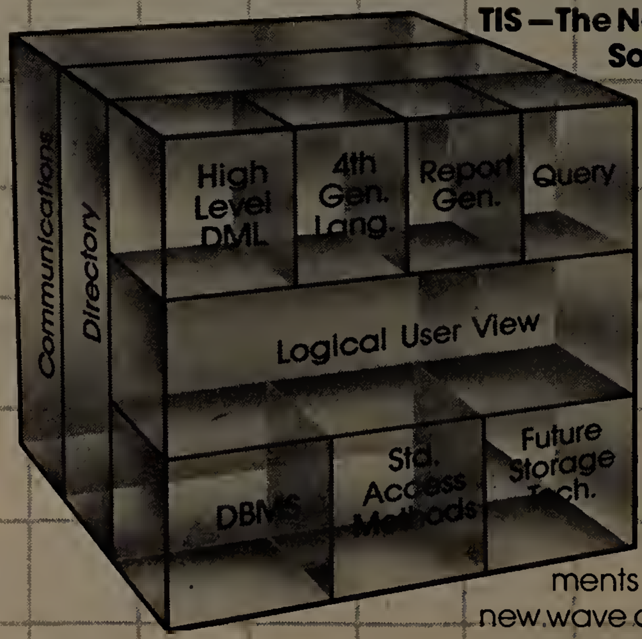
Once the components have been given appropriate consideration, the need for a sound contingency plan will become much clearer and the groundwork for the presentation to senior management will have been done.

A primary requirement for successful contingency planning is assigning specific project responsibility. Someone must be given responsibility for seeing the project through to completion. This person should be identified by a title that relates to the function: contingency planning manager (or coordinator).

Of course, that person must also carry the appropriate authority. Without it, he will have difficulty achieving his goal. Top management must establish that this project has a high priority, its success is important and the contingency planning manager is to be accorded complete cooperation.

Where to begin? The first step is to determine the current status of the installation's contingency preparedness. This can be accomplished through the contingency preparedness review.

The scope of this effort is to determine what, if anything, is currently being done to protect the installation in the event of a disaster. While it



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- The DBMS facility features hybrid relational data structures and virtual data base processing—with up to 95% of

may be assumed with some degree of certainty that little has been done, the review may produce some pleasant surprises.

The primary emphasis of contingency planning must be on the continuation of normal production processing. The scenario then must be built around a "worst-case" situation, which anticipates the total destruction of the data center. Any less serious situation — for example, loss of the CPU for several days — will be automatically covered.

The preparedness review should work backward from a worst-case presumption. The purpose of this review is to conduct an audit of the current plans. The goal should not be to highlight the current deplorable state of preparedness, but to develop a "baseline" upon which to build a strong contingency plan.

Checklists, both for conducting the preparedness review and assisting in the development and testing of the completed contingency plan, can speed the process and ensure a more complete effort. The lists can be developed in-house, but the necessary information can also be purchased from several sources. The expense associated with buying checklists is small, and prepared lists can be much more practical than developing the lists inhouse.

Areas of Concern

If correctly carried out, the preparedness review will show the areas of weakness with regard to contingency planning. Once complete, the review sets the stage for designing and developing the contingency plan itself.

At this juncture, the contingency planning manager will have determined the baseline and will be able to identify the major areas of concern.

Because the organization's vulnerability centers upon the ongoing availability of the production processing facility, the contingency plan's design must focus on three areas:

1. The data center production function.
2. The protection of the organization's data.
3. Ongoing maintenance and development of systems.

Data Center Production

To protect the data center production function, the MIS department must ensure that a viable data processing production facility — a backup data center — is available and can be utilized on short notice in the event of a worst-case situation.

Temporary loss of all or some equipment in the data center can, if necessary, be covered through the use of "mutual assistance" agreements with other data centers. As an example, the loss of the CPU for 10 hours may not be a disaster but an inconvenience. However, if a payroll run has been scheduled for the time the CPU will be down, a backup site will be most beneficial.

Mutual assistance arrangements can be attractive for the short-term handling of critical applications on an emergency basis. Installations should not depend

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upon mutual assistance agreements in lieu of formal backup data center agreements. Factors such as communications networks and growing work loads make heavy reliance on mutual assistance pacts impractical.

The contingency plan must identify and provide assured agreement with an organization that can provide adequate hardware backup facilities on short notice for any length of time required. There is only one practical, safe solution to this problem: Sign a contract with one of the well-established firms that offer backup data center facilities.

In considering the selection of a backup data center, a number of points must be considered:

1. *There must be written agreement between the management of the backup sites and the organization seeking the protection of the site.* This agreement must address the following issues:

- Schedule of fees to be charged, both for the right to enact the provisions of the agreement and the rates charged if the hardware is actually used.
- Agreement, in writing, as to the conditions that constitute a disaster. Usually this will include a set fee for beginning the process of using the backup site. This is a perfectly acceptable procedure, necessary from the standpoint of the backup site in order to forestall the use of the backup site for overload processing. The organization entering into the agreement must be aware of these conditions and charges.

2. *Availability of equipment:*

- Will a specific hardware configuration be available?
- Can the movement to the backup site be made on short notice?
- Can the organization moving to the backup site be assured the site will be available for as long as necessary?
- What happens if two data centers require admission to the backup site at the same time?
- Will the management of the backup site provide regular, comprehensive schedules of the current equipment configuration?
- Will they provide sufficient advance notice of equipment charges so that the organization depending upon the backup site will not find itself unable to use the site?
- What communications equipment will be available at the backup site?

3. *Backup site security.* Not only must adequate protection for the backup site hardware be assured, but the security of those who will operate the equipment and the organization's data must also be adequately protected.

Good business practice dictates that prior to signing any backup agreement, an organization should contact current customers of the backup facility to find out if they are satisfied with the arrangement. The financial stability of the backup organization must also be investigated.

Prudence also dictates that all contracts and agreements between the organization and the backup facility be approved by the organization's legal staff. It is amazing how much business MIS departments transact without consulting the appropriate legal representatives within their organizations.

Data Protection

Contrary to what many users think, the selection of a backup site and the signing of a backup agreement do not fulfill all the requirements of contingency planning.

Protection of the organization's data must not be overlooked in contingency planning. The adequacy of both the facility for the off-site storage of backup data and the quality of that data must be covered in the contingency plan. This question, however, should not be limited to contingency planning. The requirement for competent management of an organization's backup data transcends contingency planning.

The loss of a single production file does not constitute a disaster. However, the inability to recreate a particular file, depending upon its importance to the business, can be anything from a small inconvenience to a tremendous problem. While adequate off-site protection of backup data is an integral part of the contingency plan, it must also be considered outside the plan.

Off-site backup storage means just

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that: off-site and in a secured, fire-protected facility. Storage in some other section of the building that houses the data center or in the computer room of some other organization is not adequate.

A number of organizations offer secure data storage facilities for a modest fee.

In addition to adequate off-site storage of the data, there must be assurance that the data is accurate and current. In some organizations, the existence of an off-site data storage facility seems to be the extent of concern with the subject. There must be reasonable assurance that the backup files stored at the remote location are the correct ones.

Two methods can be employed to verify the adequacy of the backup data files. Both methods should be used by the contingency planning manager to make sure the backup routines are being followed and that they are appropriate.

Periodic audits should be carried out at the off-site location. This is simply a process of taking a copy of the backup file listing from the data center to the backup site and checking the tapes stored at the remote site against the listing. One or two systems should be selected at random at the backup site, brought back to the data center and processed to determine the appropriateness of the backup files.

> *'Off-site backup storage means just that: off-site and in a secured, fire-protected facility. Storage in some other section of the building that houses the data center or in the computer room of some other organization is not adequate. A number of organizations offer secure data storage facilities for a modest fee.'*

When periodic tests of the contingency plan are conducted, it is important to use the backup file to reprocess complete production runs. This will verify the adequacy of the contingency plan and the backup data files.

Storage of backup data files must not be limited to production data. Provision must also be made for storing copies of operational programs, program documentation, systems documentation, operations documentation and any other items that are pertinent to the effort to return a destroyed data center to normal operational status.

Ongoing Maintenance And Development

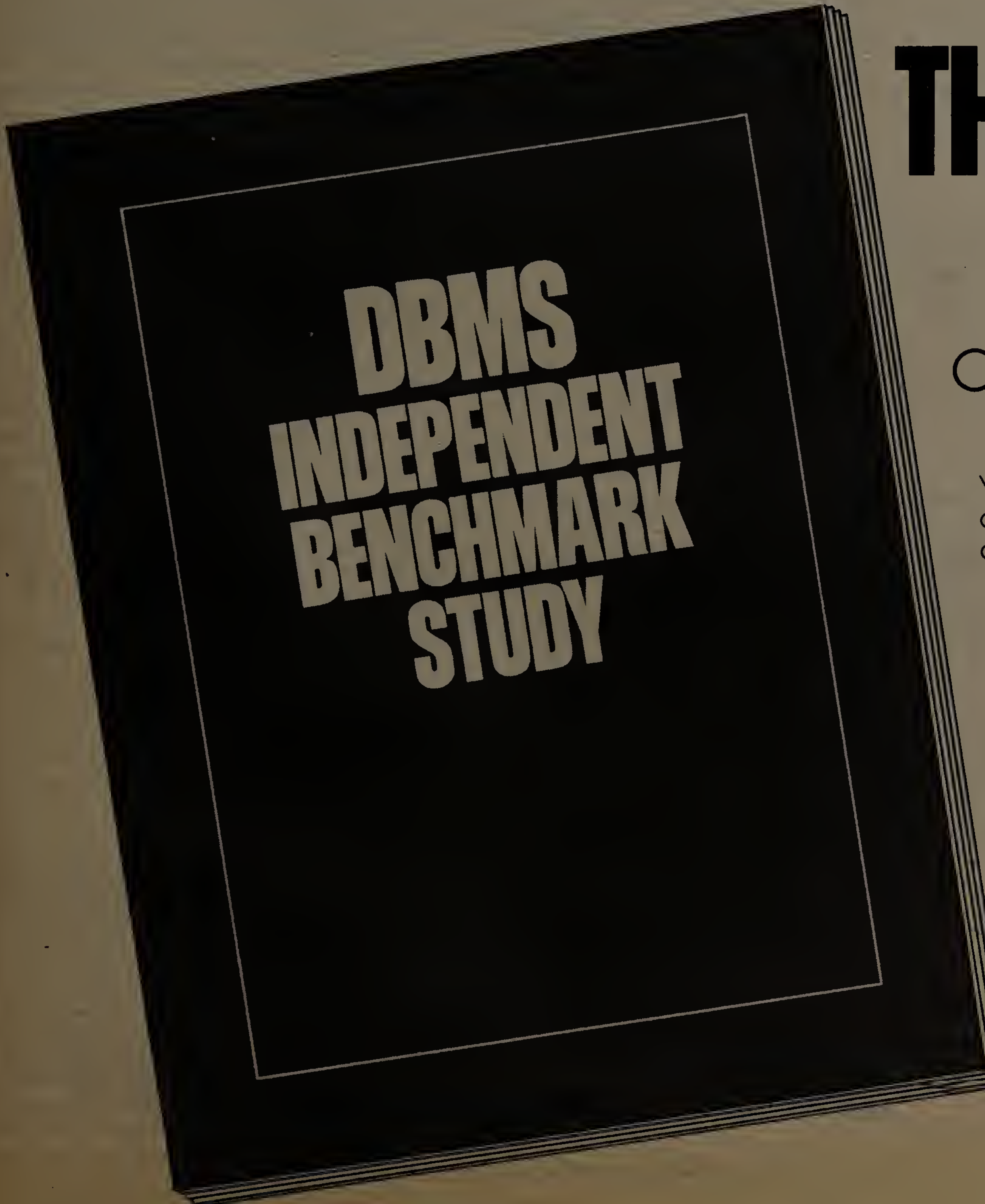
The final component of sound contingency planning must not be overlooked: the requirement that, once operational processing has been resumed, at least a limited degree of system change or introduction of new systems can be accommodated at the backup data center. Given a worst-case scenario, it can be argued that any consideration of new development would not be practical during the time processing was being done at the backup data center. However, contingency planning must be as comprehensive as possible. It cannot be safely assumed that new development or massive changes to existing systems will not be required in the midst of a disaster.

The essence of contingency planning must be to anticipate situations and to be as prepared to handle them as is economically feasible. A development project may be of such importance to the viability of the organization that even in the face of a disaster the effort must be carried out.

It is even possible that the disaster itself could necessitate a new development project. A disaster might encourage a competitor of the stricken organization to implement a new sales campaign that would put the organization at a distinct disadvantage. In such a circumstance, the ability to respond, regardless of the difficulty imposed by a disaster, could be of paramount importance.

There is also the question of providing support for the ongoing systems and programming effort, outside of the emergency development effort. Members of the development staff will need testing support. If the disaster is of such magnitude as to disrupt the work of systems and programming for more than several days, the costs in terms of lost productivity and forward movement will mount rapidly.

The design of the contingency plan



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need not be particularly lengthy or elaborate as long as the plan can provide adequate protection. Attempts to overdesign the plan or to go into too much detail may be a contributing factor to the problem of failure to deliver effective contingency planning.

One cannot anticipate every situation or every aberration. A plan that assumes the worst case, that covers the basic functions and assumes that recovery will be as smooth as reasonably possible is preferable to a grandiose scheme that is never completed.

Critical Details

Several key points should form the basis of the contingency plan. Clear, explicit instructions must cover staffing considerations, notification to management and MIS clients, notification to vendors and implementation of the plan.

The plan must identify specific responsibilities for various members of the data center staff. The plan must be based upon the premise that in the event of a disaster, critical functions will continue to operate even if those who normally have the responsibility are not available.

As an example, the declaration of a disaster situation should place the contingency plan manager in charge of all activities associated with operating the plan. In the absence of the manager, some other employee must possess enough knowledge of the plan to assume responsibility.

A chain of responsibility must be developed. Supervisors must be prepared to take over operation of the computer with computer operators to carry out data control functions and so on.

Disasters create a great deal of confusion and excitement. Care must be taken to ensure that the plan, while complete, does not fall apart because someone whose skills are critical is unavailable. In well-managed data centers this will not be a problem, because adequate backup and cross-training of staff members will be routine.

Once a disaster has been acknowledged, senior management of the organization and the clients of the data center must be informed. Those contingency plan managers who are sufficiently astute will have taken the precaution to keep both of these groups apprised of the existence and function of the plan. Taking this tack will ensure less confusion and more cooperation in the event of a disaster.

The plan must also provide for notification to the data center's vendors. This includes vendors of supplies as well as hardware. A list of vendors must be included in the contingency plan and updated on a regular basis.

The contingency plan manager must maintain contact with representatives of the backup data center. Should a disaster occur, rapid response is essential. The better the rapport between the contingency plan manager and backup data center management, the smoother the transition from the destroyed data center to the backup site. This may appear to be a rather minor consideration, but the payoff in time savings can be considerable.

Documenting the Plan

The contingency plan must be documented so that it will provide specific instruction in the event of a disaster, but can also be easily updated and changed as circumstances change. Complete sets of the plan should be reviewed and approved by appropriate management personnel outside the MIS department.

At least the plan should be reviewed and approved by the organization's outside auditing firm.

Several copies should be stored at locations outside the data center. The contingency plan manager should retain the "master" copy. He uses his copy to record changes to the plan and to control the content of the other plan copies. One copy of the plan should be stored at the remote data center site and one copy should be stored with the backup data files at their remote site.

Final Test

By the time the organization has completed negotiations for the backup data center, finished the preparedness review, designed and laid out the plan and considered the doc-

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umentation, many will breathe a sigh of relief that the contingency plan is complete. However, while a great deal of progress will have been made, much more work remains.

There is only one way to verify the contingency plan's adequacy: test it under circumstances that will, as nearly as practical, duplicate actual disaster conditions.

A full-scale test will undoubtedly elicit objections within the data center. The argument will be raised that too much time and effort will be required and that "important" work will be neglected. Such objections must be disregarded.

Testing of the contingency plan does require time, effort and coordination. It should be anticipated that the first attempt at a full-scale test at the backup data center will be something less than a complete success. Some small, yet very important detail or details, will be found to have been overlooked. In all likelihood, this will be sufficient to abort the test.

The purpose of the test is to identify and correct these difficulties. They must be corrected and the test rerun until it goes smoothly.

How should the contingency plan test be conducted? It may not be practical in large installations to attempt a complete test. The testing criteria will differ by installation. Nevertheless, in every installation the test must be structured to address the critical aspects of production processing.

The practical goal of contingency plan testing should not be to cover every production aspect of the operation, but to assure that the organization's critical production can be carried out at the backup data center, that the off-site backup files are correct and that those who will participate in the actual recovery fully understand both their duties and the function of the plan.

How often should the test be conducted? Again, each installation must answer within the context of its particular requirements. Generally, a full-scale test at the backup data center should be conducted at least once a year. Audits of the backup data files should be conducted quarterly.

The testing of the contingency plan and the auditing of backup data files are the responsibility of the contingency planning manager and should be conducted under the manager's direct supervision. Upon completion of tests or audits, a report covering the problems found and the action taken to correct them should be submitted to the appropriate management representatives.

Management Support

Recognition of the importance of an effective, workable, regularly tested and updated contingency plan is the primary step in moving the process along. Once the preceding aspects of contingency planning have been thought out, the MIS manager will possess sufficient information to put together the contingency planning process for presentation to senior management.

Given the number of concerns vying for the attention of an organization's senior management, the subject of contingency planning may be viewed as rather insignificant. Again, regardless of the difficulties, the MIS manager must persist; too much is at stake to allow the subject to remain unsupported.

How can the MIS manager go about gaining senior management's interest and obtaining the requisite support? To begin, he must make clear that the damage brought by an MIS disaster will be just as severe for the rest of the organization as for the MIS department.

The MIS manager should assume senior management will adopt a pragmatic "bottom-line" approach to the subject of contingency planning. The MIS presentation should also use this approach.

It is easy to take a pragmatic approach in presenting a contingency plan for approval. The organization must weigh the cost of the planning process against the "cost" of possibly going out of business in the event of a disaster.

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No matter what your application, the CompuStar can handle it! Three disk storage options are available. A tabletop 10 megabyte 8" winchester-type drive complete with power supply and our special controller and multiplexor costs just $4995. Or, if your disk storage needs are more demanding, select either a 32 or 96 megabyte Control Data CMD drive with a 16 megabyte removable, top loading cartridge. Plus, there's no fuss in getting a CompuStar system up and running. Just plug in a Video Processing Unit and you're ready to go . . . with up to 254 more terminals in the network by simply connecting them together in a "daisy-chain" fashion. CompuStar's special parallel interface allows for system cable lengths of up to one mile . . . with data transfer rates of 1.6 million BPS!

Software costs are low, too. CompuStar's disk operating system is the industry standard CP/M*. With an impressive array of application software already available and several communication packages offered, the CompuStar can tackle even your most difficult programming tasks.

Compare for yourself. Of all the microcomputer-based multi-user systems available today, we know of only one which offers exactly what you need and should expect. Exceptional value and upward growth capability. The CompuStar™. A true price and performance leader!

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ness of MIS and the impact it has on the entire organization. Properly done, the contingency plan request can also provide increased insight into the relationships between MIS and the rest of the organization. The MIS manager should view this as an opportunity to raise senior management's awareness of MIS: a rare opportunity in many organizations.

The effectiveness of the presentation can be enhanced if the subject is treated as an MIS project. This assumes, of course, that the MIS department has developed adequate techniques for project development and that it has built a reasonable degree of credibility with senior management.

The contingency planning project should be structured to address the following points:

- A review of the inherent risks to the organization posed by an MIS disaster.
- The current level of protection — the result of the preparedness review.
- Project costs, both initial (for the design, development and testing of the plan) and ongoing (maintenance expenses).
- Review of the project development plan, with checkpoints, to provide periodic progress reporting points.
- Installation of a mechanism to report the status of the plan, once operational, on a continuing basis.

Each part of the presentation must be developed so that senior management is able to determine the scope, costs and potential benefits of each project phase. It may be that MIS management has decided to engage a consultant to assist in designing and implementing the plan; if so, the consultant should play an active part in developing the senior management presentation.

Sound Investment

It is quite appropriate to view the contingency plan as an insurance policy. The insured party pays premiums with the hope that he will never have to collect. If the need arises, the money spent on the premium — in this case, the expense of the contingency plan — will be judged to have been a good investment.

MIS management may be reluctant to raise the question of contingency planning for fear of being asked why nothing has been done about it in the past. It is far better to raise the issue, accept any criticism and move on with the project than to continue to ignore the subject. The MIS manager must understand that sooner or later the issue will surface; it is better that he raise it than someone else.

Contingency planning is an absolute necessity. The MIS manager has a clear responsibility to provide a sound, effective plan. In those installations where the issue is being ignored, MIS management is remiss.

About the Author

John P. Murray is MIS director for the Ray-O-Vac Corp. in Madison, Wis. In that position, he is responsible for the company's worldwide MIS activities.

Murray has 20 years of DP experience, 10 of which have been devoted to the management of data centers.

He also writes a monthly column for Computerworld.

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Packet Network Connects Directly To Various Devices

TEANECK, N.J. — Graphnet, Inc. has announced the Freedom Network, a public packet-switched service that it claimed lets users send messages for 30% less than Western Union.

The message delivery system features direct-connect access to intercompany and intracompany message services via "virtually any telex, TWX, CRT terminal, computer or word processor, interactively, without worrying about line speeds, device codes or system protocols," a Graphnet spokesman said. Interactive global communications are handled terminal-to-Telex.

The network features computerized store-and-forward capability as well as forced-delivery electronic mail capability.

The service is especially suitable for companies with personal computers, word processors and executive workstations, according to a Graphnet spokesman. "A Freedom Network subscriber with a small business system in New York can send messages to a computer terminal in San Franciso, a word processor in Chicago, a Telex in Tokyo and a personal computer in Dallas without worrying about the technical details of moving information from one type of device to another or from one network to another," he said, noting that public and private terminals can be addressed in English.

Messages can be redirected automatically to accommodate peak origination loads, the spokesman said. An automatic camp-on capability delivers urgent messages as soon as a destination terminal is free. Automatic call forwarding is provided if a terminal becomes inoperable.

Available to users of the Freedom Network are cost, time and usage accountability; transaction reporting; and departmental and segmented billing.

Comparing its charges against those of Western Union, Graphnet said that it charges 45 cents for a 150-word TWX message while Western Union charges 86 cents.

More information on the Freedom Network is available from Graphnet, 329 Alfred Ave., Teaneck, N.J. 07666.

IRD: Baseband Local Nets Viable Broadband Foe

By Phil Hirsch
CW Washington Bureau

NORWALK, Conn. — Recent predictions that broadband local-area networks will become more popular than baseband systems, such as Xerox's Ethernet, are mistaken, said International Resource Development, Inc. (IRD), a telecommunications market research firm headquartered here.

According to a recent 160-page report published by IRD, the movement of broadband systems into the market will not affect significantly sales of baseband networks. The report, titled "Local Networks and Home Information Systems: The Cable Connection," predicted that of the six million local network nodes that it estimates will be installed by 1992, four out of five will be baseband.

The only real difference between baseband and broadband is the way data is transmitted through the network, the IRD report pointed out. Broadband systems encode data on one of several existing carrier signals that are dispersed across the bandwidth of the coaxial cable. The data carried on baseband, however, is its own carrier. As a result, a broadband network can carry many data signals simultaneously, while baseband networks carry only one.

If a company's principal interest is in increasing productivity through expediting the movement of mail and similar documents among its offices, a baseband network is adequate, according to the report. It pointed out that a 2,000-workstation Ethernet network can handle over 5,000 pages of information per employee in an eight-hour day.

"There aren't many people who can skim, let alone read, that much information in that time," said Davis Foulger of the IRD research staff. "If, on the other hand, a company wants to operate a videoconferencing network on the same local-area network that it's using to distribute documents, they probably need broadband," he added.

Although broadband can do more things at once than baseband, the added capabilities requires added investment, he said. This is true, he added, even given the cost savings that come from using the same cable, junctions, amplifiers and connectors employed by cable TV networks.

Telex Model 174 Controls IBM Terminal, Printer Clusters

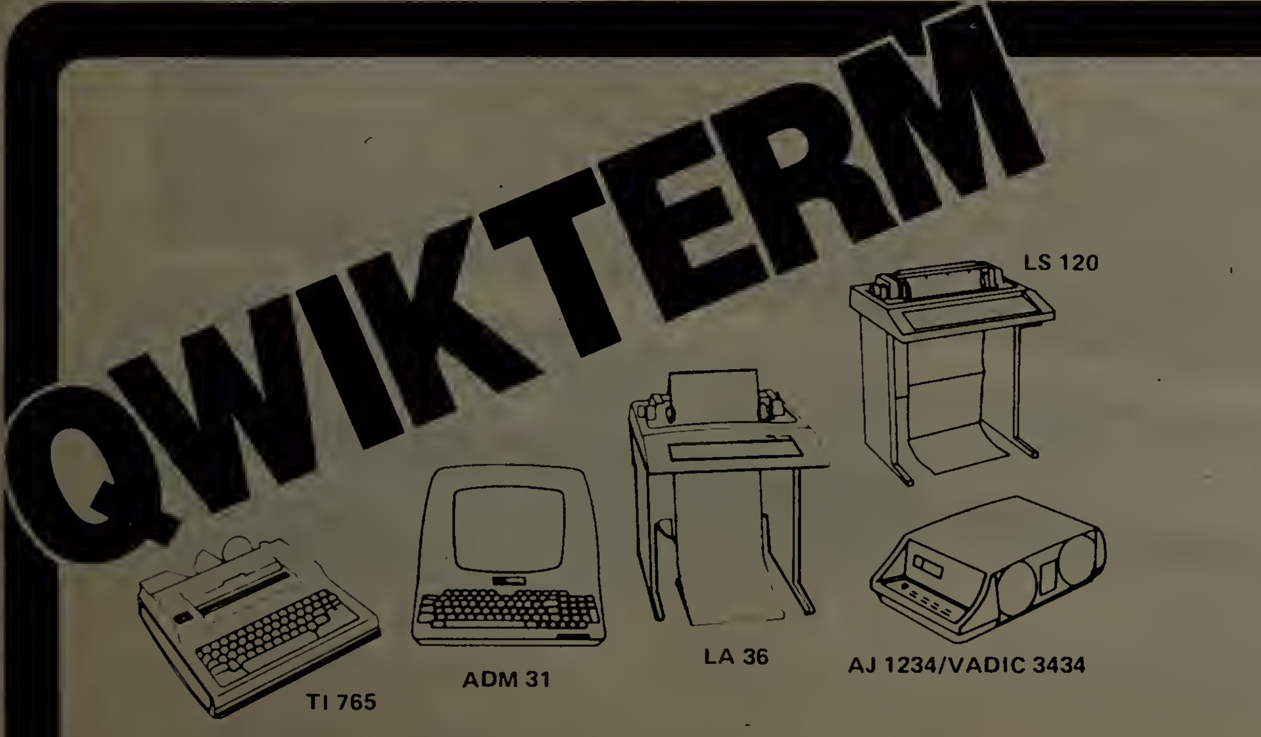
TULSA, Okla. — A 16-port control unit designed for operating IBM 3270 CRT terminal and printer clusters is available from Telex Computer Products, Inc.

The Model 174 controller reportedly supports terminals from the vendor and IBM "A" types. Those devices include Telex's line of Model 278 CRT terminals, the Model 279 color CRT terminal, the 286/287 model matrix printers and IBM's 3278 and 3287 terminals.

The 174 Model I attaches up to eight terminal devices and the 174 Model II is configured with two eight-port controllers for maximum support of up to 16 terminals. Each eight-port configuration can independently support either binary synchronous communications or synchronous data link control communications protocols, Telex claimed. An optional modem adapter allows both controllers to share one mode.

The 174 Model I costs $5,000 and the 174 Model II, $8,500, the vendor said from 6422 E. 41st St., Tulsa, Okla. 74135.

The 174 Model I



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Baseband Still Viable

(Continued from Page 1)

broadband," he added.

Although broadband can do more things at once than baseband, the added capability requires added investment, he said. This is true, he added, even given the cost savings that come from using the same cable, junctions, amplifiers and connectors employed by cable TV networks.

Some of the increased costs of broadband occur when the cable is installed, according to the IRD report. Because new nodes cannot be added to a broadband network without shutting it down, the network probably will be built with more than are initially needed. By comparison, nodes are easily added to Ethernet and some other baseband systems "at any time," the report said.

Baseband Costs

Regarding baseband costs, IRD suggested that they not only are lower than broadband today but will remain that way. The study cited a projection by Intel Corp. which shows that the transceiver and controller used on Ethernet will fall to the $120 to $150 range by 1985. These items will be even cheaper when both are built into the workstation, according to IRD.

While similar claims are being made for broadband, the report said that they are "a long way from being demonstrated."

According to IRD, there will be a strong demand for both baseband and broadband systems over the next decade. Companies that need only electronic document handling facilities will buy baseband for its simplicity and low price. Companies that want or think they may want videoconferencing capabilities will buy broadband.

Copies of the report are available for $1,285 from IRD at 30 Norwalk St., Norwalk, Conn.

Apple II +, Terminals Tied

MEMPHIS, Tenn. — Softronics, Inc. has developed a high-speed communications software package for the Apple Computer, Inc. Apple II+ personal computer.

Softerm is said to allow an Apple system to emulate many CRT terminals used to access large host computers and time-sharing systems, including IBM 3101 series; Digital Equipment Corp.'s VT100; Data General Corp.'s D-200; Lear Siegler, Inc.'s ADM-3A and ADM-5; Hazeltine Corp.'s 1400 and 1500 series; and Televideo, Inc.'s 900 series.

The software, written in 6502 assembly language, supports 9,600 bit/sec transmission rates. The software costs $150 from the vendor at 6626 Prince Edward Place, Memphis, Tenn. 38119.

DCA Network Processor Receives Enhancement

NORCROSS, Ga. — Digital Communications Associates, Inc. (DCA) has announced software enhancements for its System 355 Master Network Processor.

Called Version 3.00, the software provides a console macro feature that allows the network operator to associate complex software commands with operator-defined words. The software reportedly features downline file loading, a log port, preport testing, loading speedup and a series of network management and statistics commands.

Version 3.00 costs $4,995, including a 64K-byte processing module to support the enhanced features. A basic System 355 costs $9,995.

DCA is at 303 Technology Park, Norcross, Ga. 30392.

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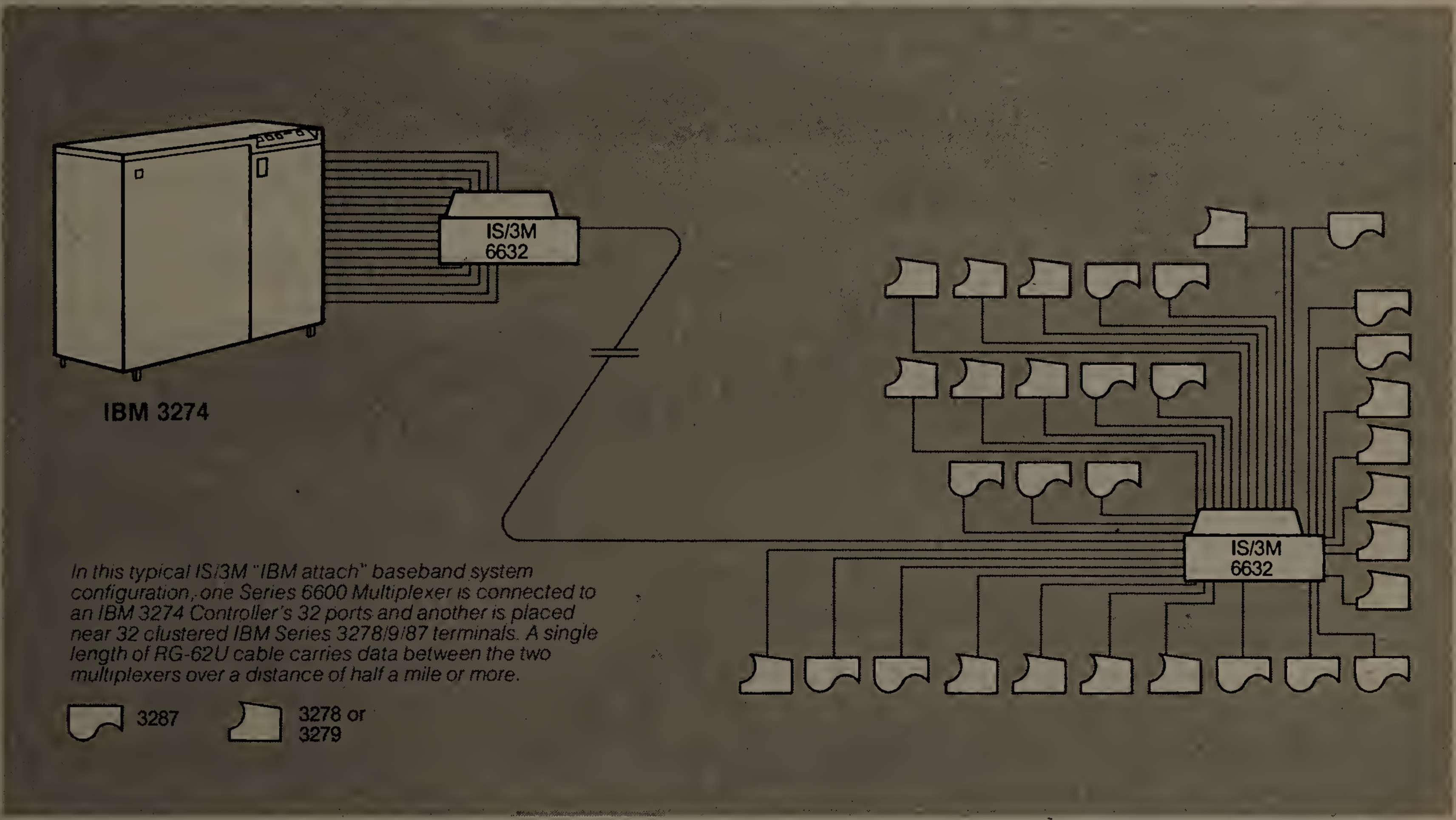

In this typical IS/3M "IBM attach" baseband system configuration, one Series 6600 Multiplexer is connected to an IBM 3274 Controller's 32 ports and another is placed near 32 clustered IBM Series 3278/9/87 terminals. A single length of RG-62U cable carries data between the two multiplexers over a distance of half a mile or more.

IBM is a registered trademark of International Business Machines Corporation.

Connect as many as 32 terminals to a distant IBM 3274 Controller with a single existing baseband cable.

Until recently, there was just one way to connect more than one IBM 327X terminal or printer to a 3274 Controller: Install another dedicated cable for each new peripheral.

Now there's another, simpler, and very reliable way to do the same job without pulling long lengths of new cable. It's called the Interactive Systems/3M Series 6600 "IBM® attach" baseband system. And it lets you hook as many as 31 extra terminals or printers onto any existing RG-62/U cable that now connects your IBM 3274 Controller to a terminal.

The method: time-division multiplexing.

IS/3M's new Series 6600 "IBM attach" uses time-division multiplexing (TDM) to squeeze more data channels onto a standard baseband cable. Installation is quite simple. One or more IS/3M Series 6600 head-end multiplexers is attached to the controller. Depending on the model selected, a single MUX can handle data for up to 4, 8, or 32 ports.

Series 6600 Multiplexer, available with 4, 8, or 32 input/output ports.

The multiplexed data streams are carried via the existing RG-62/U cable to an identical Series 6600 MUX at the remote location. Local baseband cables connect this multiplexer to its assigned terminals and printers.

Flexibility, plus uncompromised system performance.

Any combination of IS/3M multiplexers can be used with the IBM 3274 Controller, so long as the total number of channels doesn't exceed 32. For example, three 8-channel MUXes could be used with existing cables to feed up to eight terminals and/or printers at each of three different sites.

The baseband system is fully transparent and plug-compatible to IBM equipment. Just as important, it allows all peripherals to send and receive data at the standard IBM channel speed of 2.3 Mb/s.

A proven technology from an experienced company.

Time-division multiplexing has been employed successfully in long-distance telephony and computer time-sharing for years.

Interactive Systems/3M is no newcomer to data communications. On the contrary: Factories, office buildings, universities, and government installations have been benefiting from IS/3M's communications engineering, modem manufacturing, and installation expertise since 1972.

Phone (313) 973-1500 or mail the coupon for more data on the Interactive Systems/3M Series 6600 "IBM attach" system. Who knows? You may discover that you'll never have to pull a major length of baseband cable again.

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System 185 Controller Supports CMS Series

MIAMI — Racal-Milgo, Inc. has upgraded the System 185 Network Diagnostic Controller to support its Communications Management Series (CMS) products in small to medium-size communications networks.

When used with the CMS modem series, the controller reportedly will permit central site monitoring of analog parameters, as well as the identification of modems in a network by serial number. It will also support the CMS 700 remote dialing systems for automatic remote dial backup of multidrop channels, as well as the CMS 800 modular switching series.

First deliveries will be in September at a price ranging between $9,900 and $12,900 from 8600 N.W. 41st St., Miami, Fla. 33166.

Print More Than 400 Char.

Diablo Unveils Two Printers

HAYWARD, Calif. — Diablo Systems, Inc. has announced a 192-char. daisy print wheel and a specialized version of its Model 630 printer. The combined products can print more than 400 char. from a single print wheel.

The Model 630 Extended Character Set (ECS) teleprinter uses the enhanced print wheel that contains two rows of up to 96 char. each, the vendor said.

The 630 ECS is equipped with a redesigned carriage to accept the 192-char. print wheel. Two extended character print wheels are available.

One, a Teletex-multilingual wheel, provides 307 official Teletex characters as well as additional characters needed to print in 33 different languages, the vendor said.

A second print wheel is available for scientific applications. It includes a standard alphanumeric character with a full range of Greek, math and other specialized symbols, the vendor said.

The 630 ECS printer costs about $5,000, the vendor said from 24500 Industrial Blvd., Hayward, Calif. 94545.

XL-87 Unit Enhanced

MISSISSAUGA, Ont. — Cybernex Ltd. has announced an enhanced version of its XL-87 CRT terminal said to emulate Hazeltine Corp.'s Model 1510 and draw features from the Hazeltine Models 1510, 1520 and 1420 terminals.

The XL-87 auxiliary port reportedly functions as both output/input for the printer or another peripheral device such as a bar code reader as in the 1520 and 1420.

The remote printer function of the 1520 has been incorporated for host control of page print. The numeric key pad has a host-selectable alternate function mode.

The terminal is equipped with blink and inverse video attributes with a detached keyboard and a high-resolution nonglare green phosphor CRT screen. All attributes are available on a character-by-character basis in any combination.

The U.S. price of the XL-87H is $1,250 from 2457 Dunwin Drive, Mississauga, Ont., Canada L5L 1T1.

Correction

In the April 19 issue of *Computerworld*, the Execuport 4120 portable printing terminal system from Computer Transceiver Systems, Inc. was said to cost between $795 and $1,195. The 1,200 bit/sec, 120 char./sec device actually costs $3,295. The smaller Execuport 400 sells for between $795 and $1,195.

"We searched for two years for a magnetic tape input to our IBM System/34. It was a tremendous relief to discover that the Mitron STD 1600 gives us that capability."

Kathy Mast
Data Processing Manager
Communications Specialists, Inc.
Printing and Direct Mail Services
Austin, Texas

Communications Specialists, Inc., of Austin, Texas installed the Mitron STD 1600 Data Communications Terminal to give magnetic tape capability to their IBM System/34 in the fall of 1980. Using the Mitron, CSI can directly access magnetic tapes and supply magnetic tape files. You can do the same thing with your IBM System/34.

"With the Mitron I have total control. We can now do it all — without conversion equipment. I can read anything that comes in without the added cost and a two or three day delay using a service bureau," says Kathy Mast. "The Mitron STD 1600 is easy to install through the IBM System/34 communication port. It's so convenient and economical to operate, and of course magnetic tape costs about 1/12th as much to use as diskettes."

You can either lease or purchase the Mitron STD 1600. It is available with 1200′ or 2400′ reels.

The Mitron STD 1600 can also be used as an off-line, tape-to-tape terminal over the dial-up or private line network.

"We have simplified our production tremendously. And, I've just been elated with the people at Mitron and the way they have worked with us to solve any problems," adds Kathy Mast.

For more information about how you can add a magnetic tape capability to your IBM System/34, call us, **TOLL FREE,** at **800/638-9665.** Or call **301/992-7700.**

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Modems Serve Multidrop, Point-to-Point Applications

WHEELING, Ill. — Gandalf Data, Inc. has introduced synchronous and asynchronous limited-distance modems for point-to-point or multidrop applications in metropolitan areas where short-haul units are not satisfactory and long-haul modems are not warranted.

The LDM 444 synchronous and LDM 454 asynchronous modems operate over four-wire Series 3002 voice-grade lines and transmit half- or full-duplex data at 4,800 bit/sec for up to 200 miles in constant or controlled carrier modes, the vendor said. It features polling at 8.5 msec.

The interface meets RS-232C and CCITT V.24/V.28 standards. LDM 444 is available for $1,350, the 454 for $1,495, Gandalf Data said from 1019 S. Noel, Wheeling, Ill. 60090.

Data Briefs

Digilog Takes Wraps Off 2,400-, 4,800 Bit/Sec Modems

MONTGOMERYVILLE, Pa. — Two modems have been unveiled by Digilog Network Control Division of Digilog, Inc. — a 2,400 bit/sec unit and a 4,800 bit/sec version with two-channel multiplexing.

The Model 2400/26 modem is said to feature signal processing functions for leased-line or public-switched network applications. Data rate fallback to 1,200 bit/sec operation; built-in diagnostics, alternate-dial interface, data/voice mode, auto/manual answer and front-panel interface indicators are also featured. The unit costs $1,200, the vendor said.

The microprocessor-driven 4800/M modem is intended primarily for operation on point-to-point leased lines, a spokesman said. The unit costs $3,600 from the firm at 1370 Welsh Road, Montgomeryville, Pa. 18936.

Western Union Files Tariff To Extend Telex I to Hawaii

UPPER SADDLE RIVER, N.J. — Western Union Corp. has filed a tariff with the Federal Communications Commission (FCC) asking to extend the firm's Telex I teletypwriter exchange service to Hawaii.

Western Union proposed to begin the service as of April 10 at a direct-dial Telex usage rate of 34.75 cent/min.

The FCC granted Western Union authority to offer Telex service between Hawaii and the mainland March 18 under Section 214 of the Communications Act of 1934.

Western Union is based at One Lake St., Upper Saddle River, N.J. 07458.

Mobile Terminal Offers Two-Way Capabilities

RAMONA, Calif. — Printer Terminal Communications Corp. has introduced a mobile data entry terminal for its Local Area Data Distributed Radio Data Network. The terminal is said to provide a two-way full-duplex electronic data and message communications/networking capability. It operates at up to 4,800 bit/sec using standard land mobile or radio common-carrier voice channels.

The Model DET-3 terminal consists of an alphanumeric keyboard, a 40-char. single-line display and a 2K-byte internal message memory in toll or scroll access format. The terminal operates on 12V dc power, weighs less than two pounds and measures 8.25 in. by 2.5 in. by 4.5 in.

It costs $995 from Printer Terminal Communications, 124 Tenth St., P.O. Box 535, Ramona, Calif. 92065.

DCP2050 Test Equipment Simulates Satellite Links

CHERRY HILL, N.J. — An enhanced version of the Data Link Simulator has been announced here by Datatel, Inc.

The DCP2050 can be used as test equipment in the computer room or laboratory to simulate terrestrial and satellite links. It can simulate one-way propagation delays of 350- and 500 msec even for data rates as high as 64K bit/sec.

The DCP2050 is equipped with standard RS-232 interfaces. It is priced at $2,700, the vendor said from 1008 Astoria Blvd., Cherry Hill, N.J. 08034.

LSI-X.25 Concentrator Gets DEC-Based KXT Option

LONDON, Ont. — Cableshare, Inc. has announced KXT Option for its LSI-X.25 intelligent data concentrator.

The unit reportedly operates with any system based around a Digital Equipment Corp. processor and is compatible with Cableshare's line of communications products.

KXT Option can be used for connecting two or four asynchronous terminals to an X.25 or private-switching network. A two-port unit costs $4,600 and a four-port unit costs $4,900 from the vendor through P.O. Box 5880, London, Ont., Canada N6A 4L6.

High-Resolution CRTs Bow For Personal Computers

BRISBANE, Calif. — A line of high-resolution green-phospher display monitors for use with small business and personal computers has been introduced by USI International.

The new 9-in. and 12-in. monitors feature a resolution of 1,000 lines at center for graphics and data images. The 9-in. Pi-1 monitor has a minimum 64-char. by 16-line text display. The 12-in. model, Pi-2, has an 80-char. and 24-line text display.

Pi-1 is priced at $249, and Pi-2 sells for $275. Volume discounts are available on both, the vendor said from 71 Park Lane, Brisbane, Calif. 94005.

A new look for the datasouth DS180

Since introducing its model DS180, Datasouth has shipped thousands of these printers to customers throughout the world. The performance and reliability of the DS180, coupled with our sensitivity to the needs of the customer, have made the printer a notable success.

Recently we introduced new enhancements to make the DS180 even more versatile. Dot addressable raster scan graphics produces output of computer-generated charts, maps and graphs at a resolution of 75x72 dots per inch. Variable horizontal pitch selection allows printing at 10, 12 or 16.5 characters per inch plus double wide printing at 5, 6 or 8.25 characters per inch. The expanded 2K FIFO print buffer handles a full CRT screen dump at up to 9600 baud without delaying the host system. We also offer transparent mode for isolating communications problems, and for APL users, the dual ASCII/APL character set option.

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FEATURES

Standard Features
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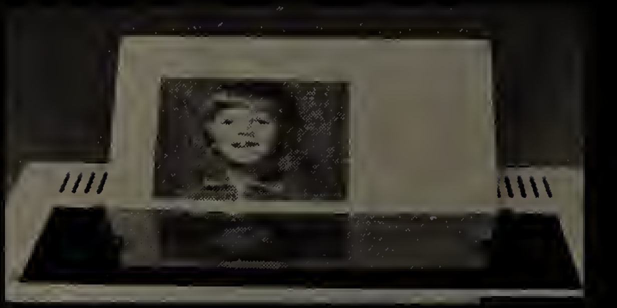
2K Expanded Buffer
APL/ASCII Character Set

The DS180 is available nationwide through our network of sales/service distributors.



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At Info/Manufacturing

NCR Unveils Three Information Systems

By Susan Blakeney
CW Staff

CHICAGO — NCR Corp. showcased three computer-based management information systems geared for small users and large corporations at the Information Management Exposition and Conference for Manufacturing (Info/Manufacturing) held here recently.

Dubbed Data Pathing System 10, System 20 and System 30, the three models address a wide spectrum of applications from stand-alone activities to large manufacturing operations with distributed source data management requirements, according to the vendor.

The System 10 is a free-standing unit that reportedly does not require back-up from a large host system. Memory sizes range from 128K to 256K bytes, while disk storage is between 2M and 40M bytes. Systems will typically support 15 source data management terminals and host interface support is provided for 2780/3780 protocols. Prices start at $17,000 for the Data Pathing System 10, the vendor said.

The System 20 is a mid-range product offering from 256K bytes to 512K bytes of memory and from 10M to 324M bytes of disk storage. It was designed for either stand-alone or distributed applications — or for concurrent use as a general-purpose system. It can support up to 30 source data management terminals, according to a vendor spokesman.

Terminals supported by the Systems 10 and 20 are NCR's 2805/2806 time-and-attendance terminal, 2820 multifunction terminal, 2872 bar-code page printer and 6441 matrix printer. Both systems are Cobol programmable.

Prices for these systems start at $35,000.

Data Pathing System 30

Finally, the Data Pathing System 30 supports the complete line of NCR terminals and is designed for use in large distributed source data management applications. Memory sizes range from 128K bytes to 640K bytes, and disk storage ranges from 10M to 240M bytes. Up to 225 terminals can be interfaced to each system, according to the vendor.

The System 30 offers redundant processor backup, 3270 and 2780/3780 host interface support, a relational data base management system and data base processor and transaction processing language support. System 30 prices start at $70,000, the spokesman said.

NCR is headquartered in Dayton, Ohio 45479.

HP Enhances Its 2608A Printer With Remote Printing Ability

PALO ALTO, Calif. — An intelligent line printer that is said to feature remote printing capabilities, two print densities and enhanced forms handling has been introduced by Hewlett-Packard Co.

The HP 2608S is an enhancement of the firm's 2608A and incorporates a high-density print mode that is said to increase dot density by up to 40%/char. while maintaining print speed at 350 line/min. The printer can have up to. 16 character sets, including an optional set with five letter sizes. It also has a raster graphics capability, a spokesman said.

For remote printing, an optional multipoint interface has been added that reportedly enables the printer to be used off site by a number of users through an HP 3000 host computer. The interface can be implemented via hardwire or modem and can work in a daisy chain configuration or access the firm's factory data link, the spokesman said.

An intelligent network processor, required for the multipoint operation, offloads the main computer by handling protocol and provides multiple error checking for each block of data that is sent to the printer, he added.

Finally, the printer has a print-one-line button for aligning forms and selecting forms length. It also includes a paper jam detector and is designed to retain forms settings in memory in the event of a power failure.

The HP 2608S printer costs $10,900 and can be delivered in 12 weeks. Additional information can be obtained from a local HP sales office.

HP 2608S

Features Forms Cutting

Serial Matrix Printer Offered

KENT, Wash. — Mannesmann Tally Corp. has announced a multifunctional serial matrix printer, the M 78-5 Trimform.

The unit features automatic forms cutting, bar code/optical character recognition printing and large-label character printing. The unit can be used to print tags, tickets, labels, checks and invoices.

The M 78-5 can handle any paper stock width up to 9½ in. and its print head automatically adjusts to varying paper thicknesses. The printer can operate at up to 200 char./sec and is available with an optional 1K-byte memory buffer. The printer costs $4,345, the vendor said from 8301 S. 180th St., Kent, Wash. 98031.

Nonstop II Gets Memory Boost

CUPERTINO, Calif. — Tandem Computers, Inc. has unveiled a 2M-byte memory board for its 16-processor Nonstop II computer system that is said to increase the computer's maximum memory from 2M- to 8M bytes.

The board incorporates 64K-bit memory chips and boosts the Nonstop II's physical memory to 128M bytes, a spokeswoman said. It can be mixed with the firm's standard 512K-byte memory boards within the same system.

The 2M-byte board costs $28,000 and is available immediately from the firm at 19333 Vallco Pkwy., Cupertino, Calif. 95014.

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SOROC 120 (Used)	$ 395.00
IBM 129 Keypunch	$1,495.00
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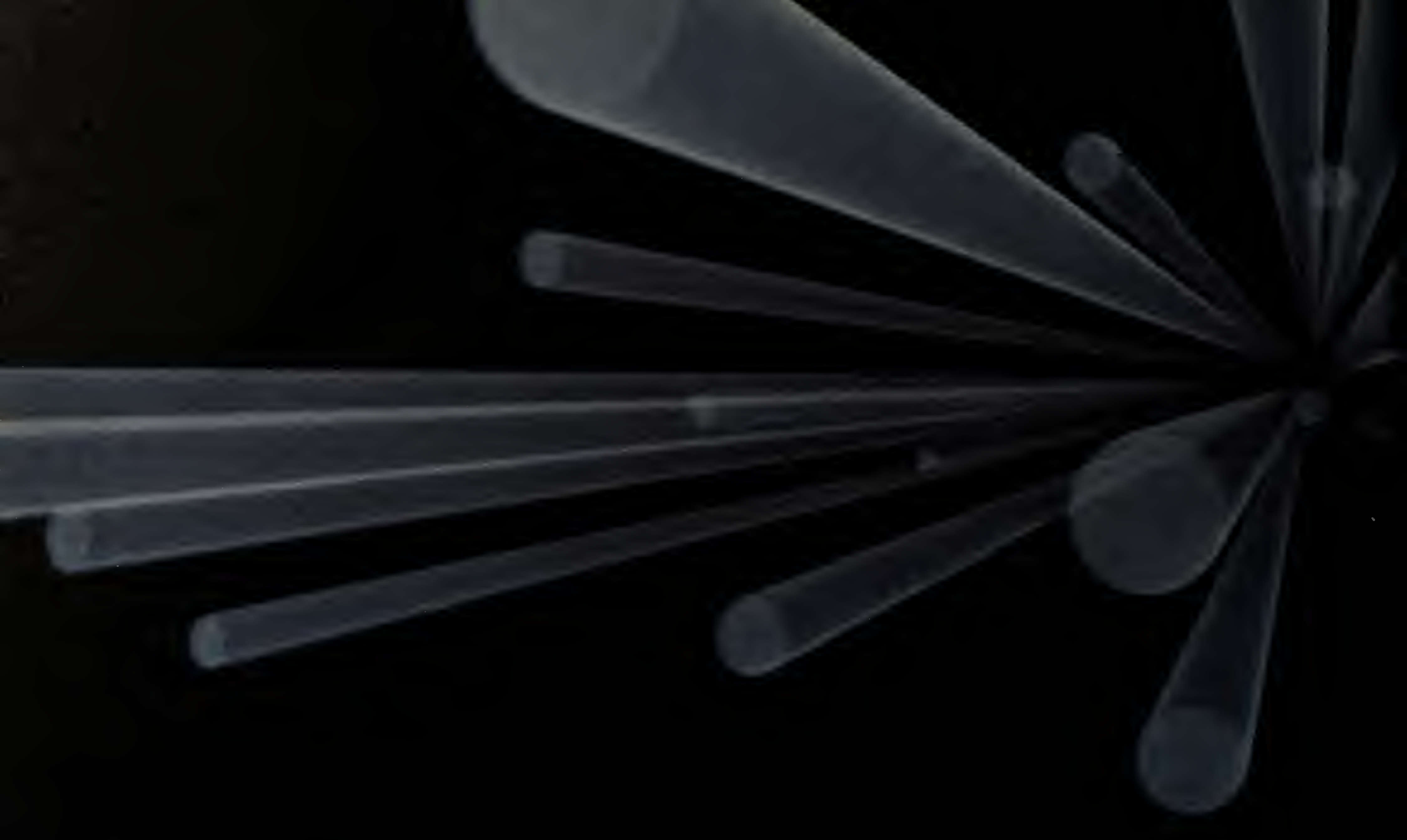

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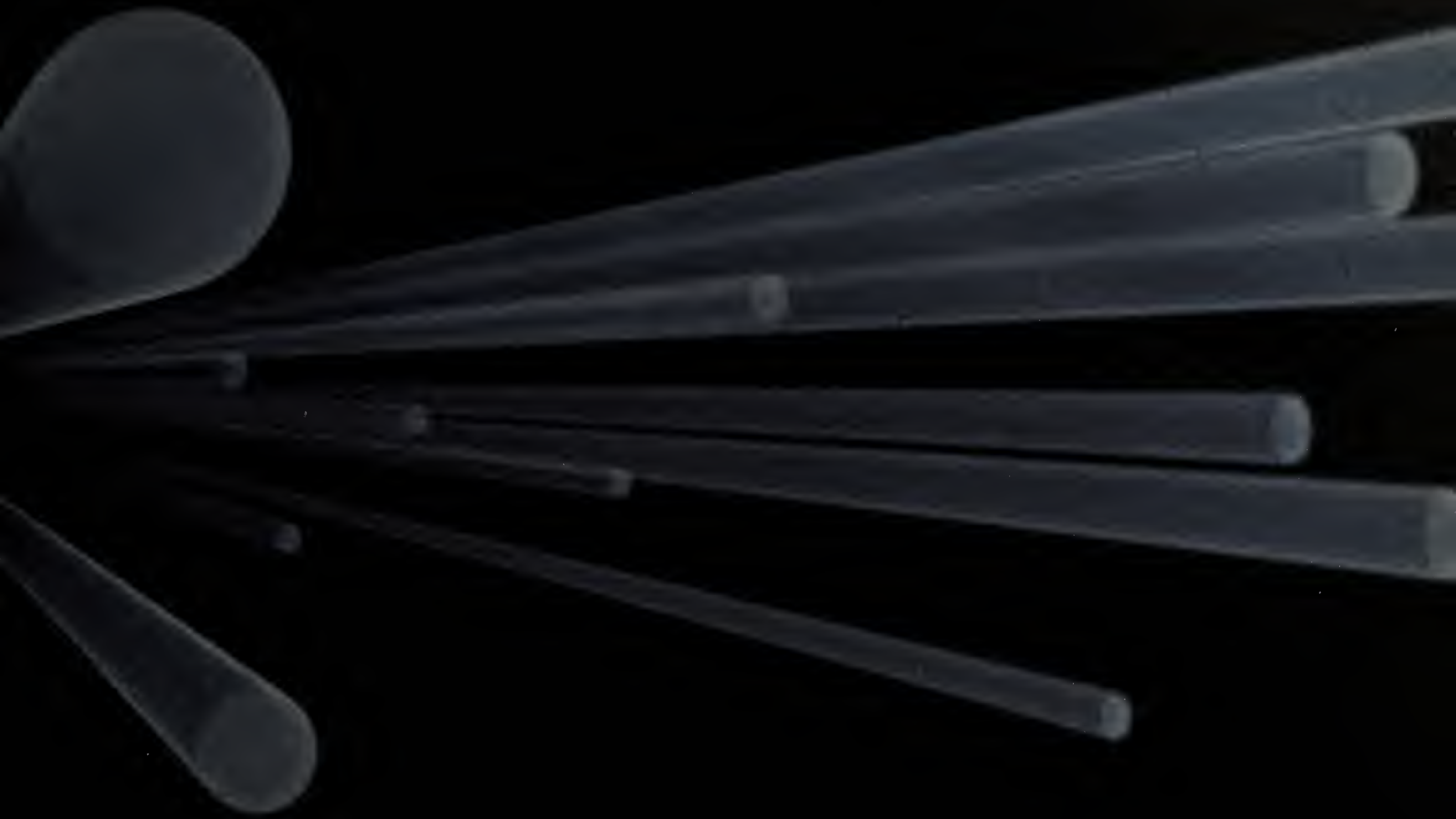
The Bell System recognizes this need for flexibility in an area particularly sensitive to change—the terminal systems you use to manage information.



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The system is 3270-compatible, installs easily, is fully modular. Its cluster controller interconnects as many as 32 terminals (8 can be printers). Displays may be located up to a mile away, printers up to 2,000 feet.

The general-purpose display stations are human-engineered for high productivity and low operator fatigue. Screens tilt. Keyboards come in five arrangements and are interchangeable. Display characters are crisp upper and lower case. A variety of printers is available to meet the exact needs of your system.

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ACF2 was developed by SKK, Inc. Rosemont, Il. SKK

Rasterizes Graphics Data

Plotting Controller Fits IBM Sites

SANTA CLARA, Calif. — An on-line plotting controller, available from Versatec, Inc., was designed to order and rasterize graphics data to offload electrostatic plot processing from IBM's 370, 360, 4300 and 30 series computers.

The Model 780 controller reportedly emulates IBM's 3211/3811 printer/controller subsystems. Operating on IBM's block multiplexer, byte multiplexer or selector and under IBM's OS operating system and spoolers, it supports high-speed electrostatic printing and plotting on any Versatec plotter.

The Model 780 accepts plot data in Versatec Random Format (VRF), rather than using traditional vectors. VRF elements include move and draw commands, text strings, areas and pen and fill commands.

VRF elements will allow representations of complex graphics entities in a single element, which reduces the amount of data to be processed and the associated requirements for memory and data output. Ordering is still required to allow for these representations.

The Model 780 is priced at $20,000 with deliveries scheduled to begin in August. Versatec is located at 2805 Bowers Ave., Santa Clara, Calif. 95051.

Versatec Model 780

Color Terminal Fits AED 512

BERKELEY, Calif. — An intelligent color graphics raster terminal said to be plug-compatible with RS-232-based systems, including Advanced Electronics Design, Inc.'s AED 512, is available from Jupiter Systems, Inc.

The Jupiter 7 terminal is said to emulate Tektronix, Inc.'s 4014 terminal. It features high resolution and 256 simultaneously displayable colors, according to the vendor. The terminal has a detachable keyboard that can be located 1,000 meters from the processor, 30 user-definable keys, a hexadecimal keypad and twin joysticks for independent pan, scroll and zoom. Other terminal-supported devices include graphics tablets, foot pedal and track ball, the vendor said.

The graphics terminal runs under the University of California, Berkeley's very large-scale integration software packages Kick and Caesar; Prime Computer, Inc.'s Aids; Control Data Corp.'s Syntha-Vision; and Tektronik, Inc.'s Plot 10.

Image formats, complying with either American or European standards, can be created by flipping a switch at the back of the terminal, the vendor added. The device costs $13,560 with quantity discounts available. Jupiter Systems, Inc. is located at 2126 Sixth St., Berkeley, Calif. 94710.

Paper Distributors Get Julien Turnkey

SOMERVILLE, Mass. — Julien Associates, Inc. here has announced a turnkey system designed for paper distribution companies.

The software works with all systems developed by Microdata Corp., Prime Computer Corp. and The Ultimate Corp. The package automates all of the companies' internal operations, tracks information flow and provides immediate access to the status of transactions, the vendor said.

The package is available for processors with memory configurations ranging from 48K- to 8M bytes, up to 800M bytes of disk storage, one to 128 terminals and one to four line printers, the vendor said.

The stand-alone software costs $17,000. Complete turnkey systems are priced from $42,000, the vendor said from 520 Columbia St., Somerville, Mass. 02143.

Cleaning Service Offered for Disks

LOWELL, Mass. — Scopus Corp. is offering a disk cartridge inspection and cleaning service for on-site, periodic inspection and cleaning of removable disk cartridges.

The Disk Cartridge Inspection/Cleaning Service is said to detect platter warpage and surface defects and to clean uniformly each surface.

Requiring no cartridge disassembly that would void the manufacturer's warranty, the service handles Digital Equipment Corp.'s RKO-6/-7 and RLO-1/-2, Data General Corp.'s 6070, Control Data Corp.'s Phoenix 9448 and IBM's 5440 disk cartridges.

Cost for the service starts at $19/unit, a spokesman said from 333 Aiken St., Lowell, Mass. 01853.

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For VAX-11/750 CMI: 80 MB Removable Emulates DEC RM03

For LSI-11/23 Q-BUS: 300 MB Removable Emulates DEC RM05

For LSI-11/23 Q-BUS: 96 MB Fixed/Removable Emulates DEC RK06/07

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For PDP-11/70 CACHE BUS: 160 MB Fixed Emulates Two DEC RM03s

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For PDP-11/04-60 UNIBUS: 64 MB Fixed/Removable Emulates DEC RK06/07

For PDP-11/70 CACHE BUS: 675 MB Fixed Emulates Two DEC RM05s

For VAX UNIBUS: 32 MB Fixed/Removable Emulates DEC RK07

For VAX-11/750 CMI: 80 MB Fixed Emulates DEC RM03

For LSI-11/23 Q-BUS: 160 MB Fixed Emulates Two DEC RM03s

For PDP-11/04-60 UNIBUS: 300 MB Removable Emulates DEC RM05

For PDP-11/04-60 UNIBUS: 96 MB Fixed/Removable Emulates DEC RK06/07

For VAX UNIBUS: 80 MB Removable Emulates DEC RM03

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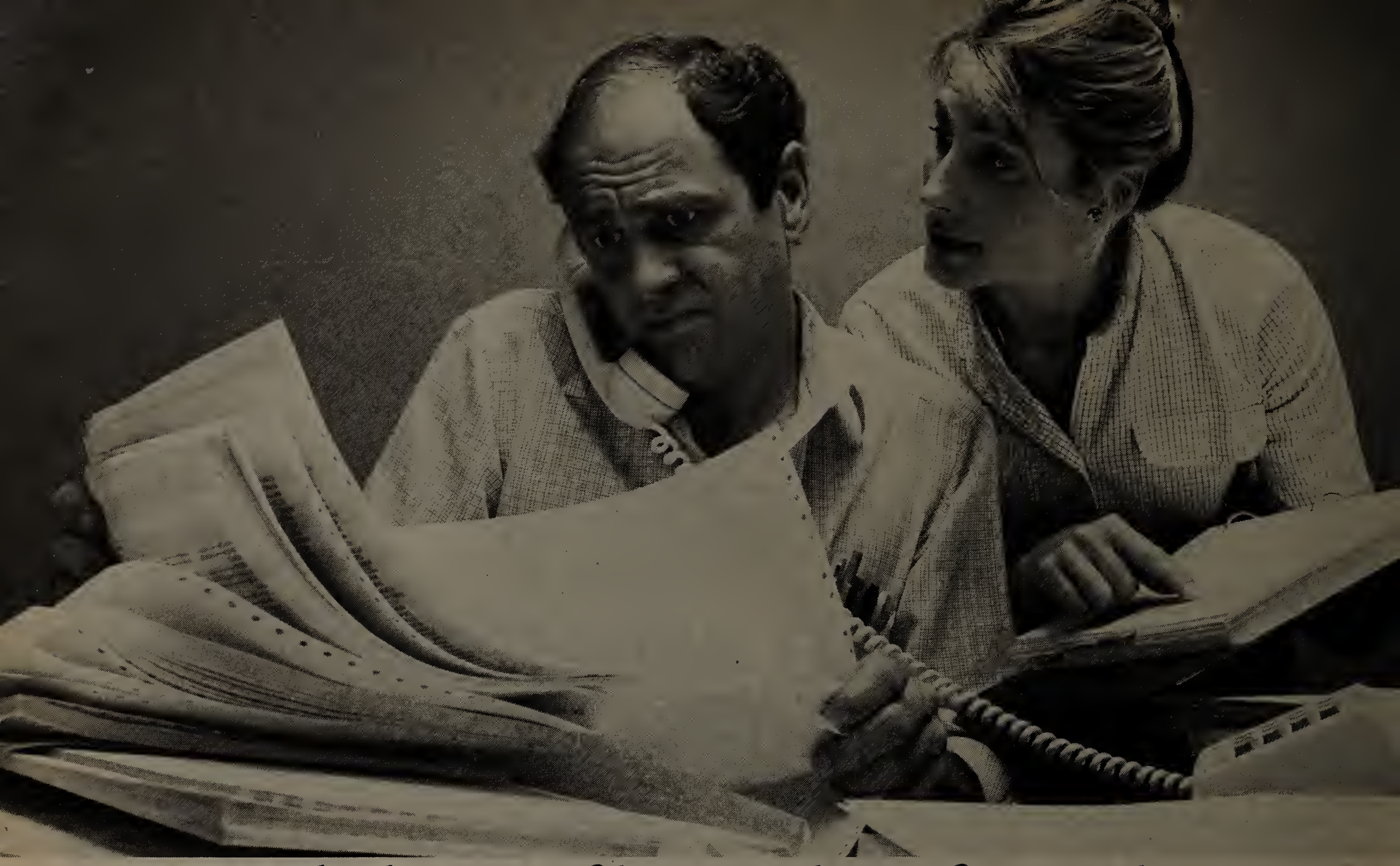

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Plotters Boast Paper Advance For Continuous Plotting

AUSTIN, Texas — Two plotters, both said to feature a paper advance for continuous plotting, have been introduced by Bausch & Lomb Co.'s Instruments & Systems Division.

The DMP-8 and DMP-9 are additions to the firm's Hiplot DMP series of plotters and offer speeds of 2.5 in./sec and 200 increment/in. The plotters are reportedly compatible with RS-232C, Centronics Data Computer Corp. or IEEE-488 interface standards.

The DMP-8 operates by remote control while the DMP-9 is locally controlled by push button. The user can choose between single- or multipen plotting.

Prices for the DMP-8 start at $2,580 while the DMP-9 is priced at $2,780.

Bausch & Lomb's Instruments & Systems Division can be reached through P.O. Box 15720, Austin, Texas 78761.

Realtors Gain Turnkey Based On DG Gear

PENSACOLA, Fla. — Computer Associates, Inc. has announced its Real Estate Transaction System (Rets), a data based turnkey system for real estate closings that operates on Data General Corp. hardware.

Rets is sold either as a turnkey system operating on DG MP/100 or Nova 4 systems or as a companion package operating on larger systems through OEMs, the vendor explained.

The basic system uses the DG D/200 Dasher CRT terminal for input and a Diablo Systems, Inc.-compatible printer terminal for letter-quality output. The enhanced system reportedly incorporates features that enable users to adapt the software for different localities, according to the vendor.

The majority of the output forms can be created by the system's forms generator working in conjunction with the data dictionary and a self-contained word processor, the vendor said.

Rets is priced from $27,000, including hardware and three to five days of training conducted by the vendor in Pensacola.

Computer Associates is headquartered at 15 W. Strong St., Pensacola, Fla. 32501.

Topaz Offers Power Center

SAN DIEGO, Calif. — Topaz, Inc. has introduced the Omnibus power distribution center, a self-contained system that is said to provide safe, easy computer room power distribution and power line noise attenuation.

The Omnibus power distribution center is mounted on casters for mobility. It provides circuits, circuit breakers and outlets to match computer components individually, the vendor said.

The Omnibus provides 100 db of common-mode noise attenuation and a minimum of 60 db attentuation of transverse-mode noise, the vendor said.

It is available for $5,530 from Topaz, 3857 Ruffin Road, San Diego, Calif. 92123.

Correction

In the April 19 issue of *Computerworld*, the price for a tape cleaner offered by Graham Magnetics, Inc. was incorrectly listed as $5,200. The correct price is $5,450.

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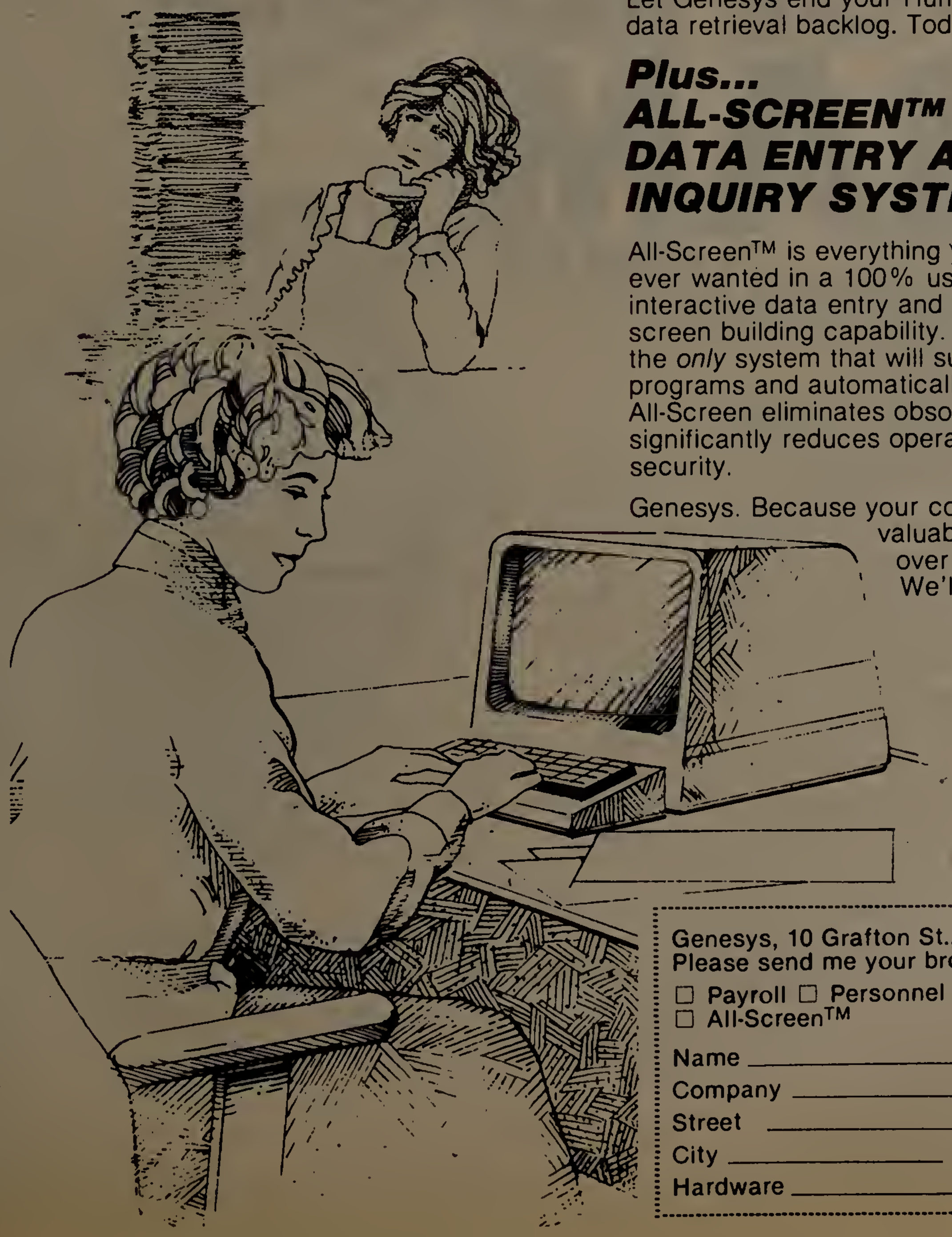

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Vidac Adds to Code Printer, Introduces Desktop Unit

CONCORD, Calif. — Vidac has added a desktop printer and an upgraded hand-held code printer to its line of printers for use in manufacturing or retail applications.

The Auto-Code desktop unit generates from one to 3,000 bar code labels with a complete array of Universal Product Code/European Article Number (UPC/EAN) codes from Local Assigned Codes for internal applications to EAN-8 to EAN-13 or UPC-A, the vendor said.

The Auto-Code was designed for applications in manufacturing operations or supermarkets where there is a need for creating codes in controlled and relatively permanent locations, according to the vendor.

The Mark II, an improved hand-held code printer, is said to have a dial-position indicator, magnified code read out and to be lighter in weight for in-store coding of scannable items.

Cost for both products depends on the type of coding chosen. The Auto-Code ranges from $5,600 to $5,900 and the Mark II from $895 to 995. Vidac is located at 1054 Shary Circle, Concord, Calif. 94518.

Power Supplies Bow for Minis

PHILADELPHIA — Exide Electronics Corp. has announced the Series 2000 line of uninterruptable power supplies.

Designed for minicomputers and small mainframes, the units are available in 10 power ratings ranging from 10 kw to 30 kw and 30 power configurations ranging from 15 kw to 45 kw, the vendor said.

Other features include a self-test capability, an intelligent front panel and a digitally synthesized waveform, the vendor said.

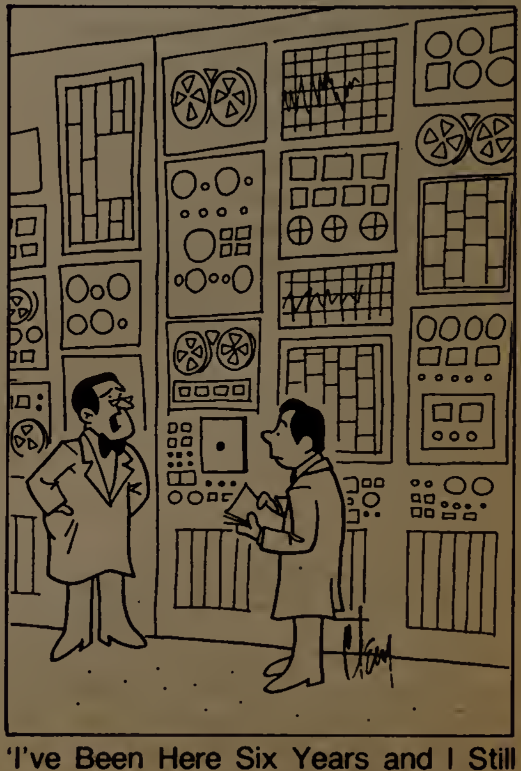
Series 2000 systems cost between $17,000 and $52,000, the vendor said from 2 Penn Center Plaza, Philadelphia, Pa. 19102.

Rups Offers Constant Power

LOS ANGELES — Computer Power Products has introduced the Rotary Uninterruptible Power System (Rups), an uninteruptible power supply with a static inverter and a battery pack.

The system is said to feature built-in power factor correction, precise voltage regulation, electrical isolation from the utility power line and 100,000 hours of mean time before failure. Models are available from 12 kVA to 125 kVA.

It is available for $35,000 to $90,000 from Computer Power Products, 2900 E. Olympic Blvd., Los Angeles, Calif. 90023.



'I've Been Here Six Years and I Still Don't Know What That Button's for.'

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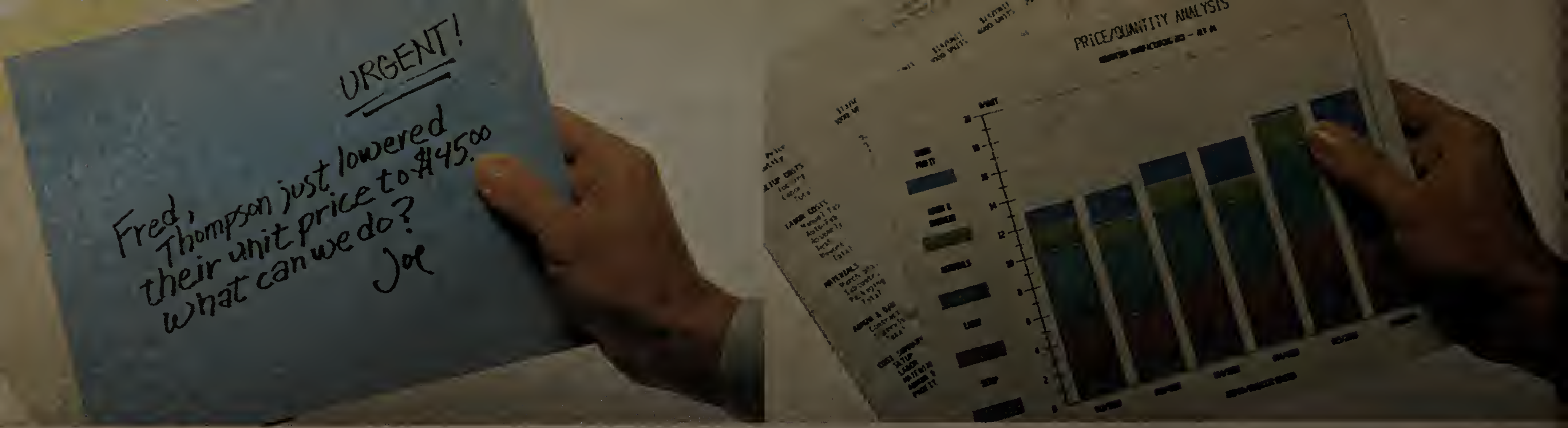
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Access Adds Line of Micros That Handle Up to 16 Users

MOUNTAIN VIEW, Calif. — Access Matrix Corp. has introduced a line of microprocessor-based computer systems that can reportedly handle from one to 16 users.

The single- and four-user systems incorporate 8-bit microprocessors and are said to be compatible with Digital Research, Inc.'s CP/M operating system. The systems include either a 10M-byte hard disk with floppy backup, or a 10M-byte hard disk with a 20M-byte cartridge tape backup. Both the single- and the four-user system have 64K bytes of memory. The four-user system can have 256K bytes with random-access memory (RAM), the vendor said.

The larger eight- and 16-user systems are said to be configured with a 20M-byte or 40M-byte hard disk and 20M-byte cartridge tape backup.

The eight-system user has 128K bytes with RAM while the 16-user system has 256K bytes with RAM, the vendor said. These systems use both a 16-bit Motorola, Inc. 68000 microprocessor as well as an 8-bit processor to provide system software compatibility with CP/M and the Bell Laboratories, Inc. Unix operating systems.

Compatibility Features

The software compatibility allows a wide range of languages and application programs to function on the Access Matrix multiuser systems, the vendor said.

The single-user systems have three serial ports and a parallel port and can communicate to the larger systems via a high-speed RS-422 port. The multiuser systems can be configured with a combination of RS-232 and RS-422 communications ports. Additional system options allow the systems to be networked in a distributed data processing system environment.

The price for the single-user systems with floppy disk range from $3,500 to $4,600. The hard-disk systems starts at $9,900, or from $14,000 to $15,000 with tape backup. The four-user system with hard disk and floppy backup ranges from $11,000 to $17,000 while the eight-user systems with dual-processing ranges from $23,000 to $29,000. Prices for the 16-user systems start at $32,000.

Access Matrix Corp. is located at 1708 Stierlin Road, Mountain View, Calif. 94043.

Billings Releases Modular Mini Line Plus Series of Micro-Based Systems

Billings Computer Corp. Series 6000

INDEPENDENCE, Mo. — Billings Computer Corp. has announced a series of microcomputer-based computer systems as well as a line of minicomputers, the latter of which can reportedly handle up to 275 user terminals.

The 6000 series minicomputers are modular machines that are provided in three configurations: the 6000 CPU, which consists of a processor with nine empty board slots; the 6000 CPU-I, which has one 360K-byte floppy disk and seven unused option slots; and the CPU-II, which has two floppy disk drives for a total capacity of 720K bytes of storage. All of the systems have 64K bytes of main memory.

The 6000 series processors are based on a Zilog, Inc. Z80A microprocessor and two controllers: a system controller and an I/O controller. The system's 64K-byte memory is monitored by a parity-checking circuit, which reportedly protects the system from possibly destructive operations in the event of a power failure.

Optional equipment for the 6000 series includes: a video board, to provide control signals for the CRT; a flexible disk controller board, used for controlling mini or 8-in. floppy disk drives; a mass storage interface board, which provides a parallel interface to connect the 6000 tape unit; a serial peripheral interface board, which supports two RS-232C channels; a modem interface board; and a serial communications interface board, which can control four asynchronous, synchronous or bit-oriented channels such as IBM's synchronous data link control and high-level data link control, a spokesman said.

The price of systems in the 6000 series begins at $6,000.

The 500 series processors is similar to the firm's BC-12FD computer, but has an internal power supply, a detachable keyboard and a nonglare CRT screen. Also available in three models — the 500 CPU, 500 CPU-I and 500 CPU-II — the systems have a total of 56K bytes of memory and an on-line mass storage capability up to 4M bytes, the spokesman noted.

Prices for the smaller system start at $5,000.

The 500 series computer can be used with the 6000 in a distributed processing arrangement to access common data files. The 6000 was also designed to be a part of the firm's recently introduced Functionally Structured Distribution distributed processing network, which is said to be compatible with the Advanced Communication Service proposed by AT&T.

Software for both systems includes packages for inventory management, cost accounting and budgets, as well as word processing and mass mailings.

Additional information on the 500 series and 6000 series computers is available from Billings Computer at 18600 E. 37th Terrace, Independence, Mo. 64057.

Emulex Upgrades Disk Controllers

SANTA ANA, Calif. — Emulex Corp. has introduced upgraded versions of its Models SC02, SC04 and SC12 disk controllers for Digital Equipment Corp. PDP-11 minicomputers and LSI-11 microcomputers.

The controllers are said to be transparent to DEC's standard diagnostic and operating system software and able to emulate DEC's 5M-byte RL01 and 10M-byte RL02 cartridge disk subsystems.

The SC02/L controller, which provides storage module device (SMD) interfacing for connection of one or two disk drives to the LSI-11 Q-bus, costs $2,500. The SC04/L controller reportedly provides Ansi interfacing for connection of up to eight 8-in. Winchester drives to an LSI-11 Q-bus and costs $2,350.

Finally, the SC12/L controller provides SMD interfacing for connection of one or two drives to the PDP-11 and VAX-11 Unibus and costs $2,500 from the firm at 2001 E. Deere Ave., Santa Ana, Calif. 92705.

Rental/Purchase Plan Offered

SANTA ANA, Calif. — Emulex Corp. has initiated an optional rental/purchase program that allows users to rent the firm's controllers or disk systems for either one or two years and to apply a percentage of the monthly rental charge to the purchase price.

Monthly rental fees are reportedly fixed and can be spread out over a term of either 12 or 24 months. The user can buy the equipment at any time during the rental period or at its end, a spokesman said. Users can also extend the rental period on a month-by-month basis and then purchase the equipment or terminate the extended rental agreement by giving at least 30 days' notice.

No down payments are required; the equipment's monthly payments are usually lower than payments for typical full pay-out lease arrangements, the spokesman claimed.

All disk storage subsystems are covered under the plan. Emulex subsystems are compatible with Digital Equipment Corp. LSI-11, PDP-11 and VAX-11 computers. The firm is at at 2001 E. Deere Ave., Santa Ana, Calif. 92705.

Matrix, Daisywheel Printers Offered for System/34, 38

IRVINE, Calif. — Ampak Business Systems, Inc. has introduced two matrix printers and one daisywheel printer for the IBM System/34 and System/38.

The DWP 34/38 is a multimode bidirectional logic-seeking matrix printer operational at 200 char./sec for DP applications or at 50 char./sec for word processing functions, the vendor said.

The DP 34/38 is a bidirectional logic-seeking matrix printer at 200 char./sec.

The Letterpro 34/38 is a letter-quality 55 char./sec daisywheel printer featuring 10-, 12- and 15-pitch horizontal spacing, two type styles, 6 or 8 line/in. vertical spacing and an RS-232C interface, the vendor said.

The DWP 34/38 costs $5,195, the DP 34/38 costs $4,395, and the Letterpro 34/38 costs $5,395 from the firm at P.O. Box 17494, Irvine, Calif. 92713.

Contractors Gain Turnkey System

VERNON, Conn. — Computer Concepts, Inc. has introduced a turnkey computer system for contractors that includes accounts payable, accounts receivable, payroll, job costs and general ledger software.

Applications software, which runs under Digital Research, Inc.'s CP/M operating system, is supplied by the vendor. The hardware includes an Altos Computer Systems, Inc. ASC 8000-10, ASC-8000-12, ASC-8000-14 or ASC-8000-15 microcomputer featuring 208K bytes of random-access memory.

The turnkey's price starts at $17,500 from Computer Concepts, 45 Hartford Tnpk., Vernon, Conn. 06066.

Integrated Tabletop System Based on LSI-11/23

HUNTSVILLE, Ala. — An integrated tabletop computer system that is based on Digital Equipment Corp.'s LSI-11/23 processor has been unveiled by General Digital Industries, Inc.

The Compat/123 includes a DEC processor with 256K bytes of memory; a 10M- or 20M-byte 5¼-in. Winchester disk; one or two 8-in., double-sided, double-density floppy drives; a 17M-byte cassette tape drive; and four asynchronous ports for CRTs, a printer or modem, the vendor said.

Software for the system includes DEC's RT-11 and RSX-11; Microsoft, Inc. Xenix operating systems; a Garrett Information Systems, Inc. Core graphics package; and a relational data base manager.

The Compat/123 with a 10M-byte hard disk, 1M-byte floppy disk and four asynchronous ports costs $12,175 from 500 Wynn Drive, Huntsville, Ala. 35805.

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Controller Upgrades Micro

SAN JOSE, Calif. — Alpha Systems Corp. has introduced a 5¼-in. Winchester disk drive controller and subsystem — the AS100 and AS105 — that were designed to upgrade floppy disk-based microcomputers.

The AS100 controller connects to a system's 5¼-in. or 8-in. floppy controller or floppy disk drive expansion connector, the vendor said.

The AS105 subsystem packages an AS100, a 6.38M-byte Winchester disk drive, power supply, cables and connectors.

The AS100 controller costs $595 while the AS105 system with documentation and instruction sells for $2,495. Alpha Systems is located at 711 Chatsworth Place, San Jose, Calif. 95128.

Aviv Offers Port Option

WOBURN, Mass. — Aviv Corp. has announced an optional multiport capability for its Group Coded Recording tridensity tape systems for Digital Equipment Corp.'s PDP-11 and VAX-11 minicomputers.

The multiport option enables nonsimultaneous access from up to six computers to the same bank of tape drives. No software changes are required because the multiport's manual switch on its front panel controls access from any of the six computers, a spokesman said.

Each computer contains a controller that is connected by cables into the multiport. The multiport option and second controller cost $10,500 for both from the firm at 6 Cummings Park, Woburn, Mass. 01801.

TRS-80 Gets Graphics

FORT WORTH, Texas — Tandy Corp. has introduced a graphics option allowing the Radio Shack TRS-80 Model II to create tables, charts, graphs, maps and illustrations.

The Graphics Option includes the hardware, user's manual and 8-in. disk with Graphics Basic and an assembly language subroutine library.

The option costs $499. Radio Shack is based at 1800 One Tandy Center, Fort Worth, Texas 76102.

Single-Board Controllers Unveiled for DEC, DG

SANTA CLARA, Calif. — Spectra Logic Corp. has introduced a series of single-board disk and tape controllers for Digital Equipment Corp. PDP-11s and Data General Corp. Nova and Eclipse computers and three controllers for Texas Instruments, Inc.'s 990 minicomputer.

The Spectra 21 and Spectra 20 were designed for DEC and DG computers, respectively, and can reportedly handle up to four storage module device (SMD) disks and up to eight formatted tape drives.

The Spectra 16 disk controller and Spectra 26 and 46 multifunction disk and tape controllers for TI's computer can accommodate both removable and fixed Winchester SMD disk drives. The latter two can also handle standard and streaming tape drives.

All of the controllers in the Spectra series are said to support disk drives with transfer rates of up to 2M byte/sec and/or tape drives with 320K byte/sec.

The Spectra 21 and 20 controllers feature separate buffering for both disk and tape drives and have a bipolar microprocessor architecture that is said to allow it to support simultaneous disk and tape data transfers. The DEC version is geared for the PDP-11 and emulates DEC's RM02/RM05 disk and TU10/TM11 tape subsystems while the DG model, emulates the firm's 6067 disk and 6021 tape subsystems.

The Spectra 16 disk controller has onboard 32-bit error checking and correcting and provides compatibility with TI's CD1400 disk subsystem. The controller also features four-sector data buffering said to eliminate "data lates" and to allow multiple sector transfers up to 64K bytes.

Spectra 26 and 46

The Spectra 26 and 46 have all the disk-related features of the Spectra 16 but include tape drive capabilities. The devices can reportedly simultaneously control up to four SMD disk drives and eight ½-in. formatted tape drives without modifying operating system software. They emulate the TI 979 tape subsystem.

The Spectra 46 is also reportedly geared to handle formatted ¼-in. tape drives.

The Spectra 20 and 21 are available in a number of versions, each supporting different tape devices and disk capacities. The Spectra 20 costs $5,100 while the Spectra 21 sells for $5,800.

The Spectra 16 single-function controller costs $3,800 while the Spectra 26 and 46 are priced at $4,500 each. The Spectra 16 and 46 are available immediately. The Spectra 26 will be available in September.

Quantity discounts are also available from the firm at 1227 Innsbruck Drive, Sunnyvale, Calif. 94086.

LVP/MVP Gets Plug-Compatible Memory Board

RALEIGH, N.C. — A 256K-byte plug-compatible memory board for use on Wang Laboratory, Inc.'s floppy/hard disk systems, the LVP/MVP, has been released by Southern Data Systems, Inc.

The DM-1 user-installable memory board can be used instead of the 128K-byte boards supplied by Wang, Southern Data said. It occupies only one slot on the Wang backplane.

The DM-1 costs $2,400; quantity discounts are available. SDS, which provides one-year warranties, can be reached at P.O. Box 31192, Raleigh, N.C. 27622.

Bubble Memory Bows for TM990

NEW BERLIN, Wis. — Wisconsin Electrical Manufacturing Co., Inc. is offering a bubble memory board said to be compatible with Texas Instruments, Inc.'s TM990 microcomputer bus.

The bubble memory has 128K bytes of memory and is said to be unaffected by power outages or hostile environments. Up to two bubble memory boards may be configured in a system.

The unit costs $1,990 from Wisconsin Eletrical, Box 148, New Berlin, Wis. 53151.

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Prime Gives Its 50 Series 64K-Bit Boards

NATICK, Mass. — Prime Computer, Inc. has announced that it is now offering 64K-bit technology memory boards in all of its 50 series processors. Previously, the high-density memory boards were only available on its Model 850 top-of-the-line minicomputer.

The board system is said to include a 1M-byte memory board and a .5M-byte board that reportedly eliminates the need for memory extenders on the firm's superminicomputer systems. The boards not only take up less space and increase maximum memory capacities, but they draw less current and allow interweave error control that cuts down on the amount of memory errors.

Users with existing 256K-byte memory boards who wish to expand their memory can field-install the new boards.

As add-on memory the 1M-byte board is available at a cost of $36,000 while the 512K-byte device costs $20,000.

Prime Computer, Inc. is located at Prime Park, Natick, Mass. 01760.

DEC's LSI-11 Microprocessors Gain 41.6M-Byte Disk Drive

NATICK, Mass. — Charles River Data Systems, Inc. has announced a 41.6M-byte removable-cartridge Winchester disk drive that is said to be compatible with Digital Equipment Corp.'s LSI-11 microprocessors.

The RLX3010 drive can be used for on-line storage and backup. It incorporates an 8-in. fixed Winchester disk with 31.2M bytes of formatted storage and an 8-in. removable-cartridge Winchester disk offering 10.4M bytes of formatted storage.

The unit is software-compatible with the DEC LSI-11 microprocessor and runs without modification under DEC's RSX-11M and RT-11 operating systems. The drive also supports 22-bit addressing, the vendor said.

The unit costs $12,250, the vendor said from 4 Tech Circle, Natick, Mass. 01760.

CDC Designs Disks to Fit IBM Series/1

MINNEAPOLIS — Control Data Corp. has announced a direct-access storage system that reportedly combines a fixed disk module and removable disk cartridge. The unit can be used with IBM Series/1 minicomputers.

The Certainty 280 disk storage system combines 64.5M bytes of fixed storage with 13.3M bytes of removable cartridge storage. The unit is based on CDC's cartridge module disk drives, the vendor said.

A basic Certainty 280-10 costs $14,920. An optional expansion unit, the 280-20, reportedly doubles storage capacity to 155.6M bytes. The expansion option can be field- or factory-installed. It costs $10,200 from the vendor through Box O, Minneapolis, Minn. 55440.

Printer Subsystem Fits System/34,

BEDFORD, Mass. — Continental Resources, Inc. has announced a high-speed, letter-quality printer subsystem that reportedly can replace IBM's 5256 printer running on IBM's System/34 and System/38 computer systems.

According to the vendor, an IBM System/34 or System/38 adaptor and a General Electric Co. Model 510 Corresponder were integrated to create the printer subsystem. The subsystem is said to feature 510 char./sec letter-quality printing capability on the IBM twin-axial network.

The subsystem costs $8,000 with multiple-purchase discounts available.

Continental Resources, Inc. is located at 175 Middlesex Tnpk., Bedford, Mass. 01730.

ICS Users Get Nonstop Power

ADDISON, Ill. — An uninterruptable ac power supply for microcomputers has been unveiled by Instrumentation and Control Systems, Inc. (ICS).

Lifeline allows users to isolate the computer power circuits from power line glitches and outages, according to the vendor. It features constant voltage regulation, line filtering and an inverter that supplies power only during power outages, according to the vendor.

A maintenance-free internal battery can handle the full power load for five to 10 min. Recharge to 95% of the full charge requires less than 40 min, the vendor said.

Lifeline plugs into 120V ac wall outlets and has output power of 200 VA, 600 VA and 1 kVA. Applications include telephone private-branch exchange and point-of-sale systems, security systems, medical equipment and communications systems. Depending upon specifications, a 200 VA version of Lifeline costs $1,042, the vendor said.

ICS is located at 520 Interstate Road, Addison, Ill. 60101.

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Reliability	**3.5**	3.6	3.3	3.6	3.4	3.4
Ease of Installation	**3.4**	3.2	3.3	3.3	2.5	3.0
Ease of Use	**3.6**	3.4	3.6	3.2	2.4	3.0
Efficiency	**2.9**	3.2	2.9	3.2	2.6	2.9
Troubleshooting	**3.0**	2.8	2.8	3.3	2.8	2.6
Documentation	**3.1**	2.8	2.8	3.1	2.8	2.7
Education	**3.3**	2.8	3.0	3.3	2.6	2.8
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*Survey conducted by DATAPRO Research Corporation.

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OA 'Best Thing' for Career Women: Jan Rose Presents the Defense Against 9 to 5

By Bruce Hoard
CW Staff

In a Computerworld *interview published here last week, Karen Nussbaum, president of the 9 to 5 National Association of Working Women, spoke disparagingly about office automation, saying it deskills, devalues and downgrades office jobs.*

This week CW offers a contrasting interview with Jan Rose, a marketing representative with NBI, Inc. and an experienced consultant in the office automation area.

SAN FRANCISCO — "In terms of women in the office, my viewpoint is that office automation is probably the best thing that has happened as far as career advancement possibilities for women."

That is Jan Rose's reaction to charges by Karen Nussbaum, president of 9 to 5 National Association of Working Women, that office automation is a millstone around the neck of office workers. The NBI, Inc. marketing representative disagreed with Nussbaum on nearly every point she made about office automation.

Reacting to charges that office automation leads to unskilled, repetitive work, Rose noted that a tremendous amount of office jobs that were formerly done manually were "incredibly more repetitive and lacking in skill value" than jobs now being done on word processors and other computer-based devices.

Nussbaum claimed office workers were forced to follow a pace set by machines. Not so, Rose countered. "Computers are still run by human beings, and human beings still control the speed of input and the speed of output," she declared.

She was interested but skeptical of a National Institute for Occupational Safety and Health study that concluded that clerical workers have the highest rate of stress ever recorded. Rose repeated that people have control over terminal usage.

"I get the impression that their group's major statement is that computers are controlling people," she said of 9 to 5. "I firmly maintain that people control computers, and there may be something more in the nature of the responsibilities and not just the fact that they're sitting at a CRT that increases their stress."

She went on to say that handling orders or complaints over a telephone entails much higher stress than entering those orders or complaints into a CRT terminal.

On resistance to office automation, Rose said it has been her experience that many more secretaries have approached her wanting to learn word processing than not. She said most secretaries will have higher value to their employers and earn higher salaries after learning how to operate word processing equipment.

However, the marketing representative added that once word processing operators have been trained and begin work, they sometimes feel they are not accorded the status they deserve.

Rose concurred with Nussbaum's assertion that the effects of office automation are currently greater on women than men, but predicted that will change within the next five years as management functions become more automated.

Nussbaum painted a gloomy picture of office automation-generated job displacement. Rose foresees an evolutionary upgrade of office workers. "Theoretically, office automation will allow all forms of office workers to move beyond their former skill level," she observed, adding, "Hopefully, women will be smart enough to use office automation as an advancement tool."

She said a whole new job market will open up for people who can supervise office automation functions. Staff members, system installations and systems modifications will all have to be supervised, Rose claimed.

Rose said Nussbaum is confusing data entry with office automation when she talks about office workers being paid by the line or character. Further, she said, she knew of no instances where such piecemeal pay schemes are applied to any full-time word processing operators.

"I have also found that most data entry jobs are performed by men, so I'm not sure you can call data entry a woman-related position in the office automation field right now," she said.

In conclusion, Rose noted, "I think office automation is one of the only areas where women are accepted in terms of skill level and not considered to be less skilled than men as happens in manufacturing or the more blue-collar lines in the United States today."

Workstation Attaches To Omninet Local Net

SAN JOSE, Calif. — Corvus Systems, Inc. has unveiled a personal workstation that reportedly attaches to the vendor's Omninet local network.

The Corvus Concept features a 32-bit Motorola, Inc. 68000 processor, 256K bytes of random-access memory (expandable to 512K bytes), the Corvus Edword word processing system, the Corvus Logicalc spreadsheet and full access to over 2,000 CP/M programs.

The terminal has an 8½-in. by 11-in. display that can be used in either portrait (vertical) or landscape (horizontal) orientation. There is a detached keyboard.

There is no charge for the Omninet interface and up to 64 Concepts may be configured in an Omninet local network.

The terminal's operating system supports the ability to "window" or divide the screen for several functions at once. The programmable function keys are said to make the operating system transparent to the user.

The Concept costs $4,995 in full network configuration, Corvus said from 2029 O'Toole Ave., San Jose, Calif. 95131.

Corvus Systems' Concept

Modular WP Introduced

ORLANDO, Fla. — A second-generation word processing/text editing system has been unveiled by Technology International Corp.

The Edit Pak System I modular word processor reportedly features a 12-in. CRT terminal, a detachable keyboard with illuminated function keys, a 40 char./sec daisywheel printer, unlimited memory capacity via magnetic media memory storage, discretionary hyphenation, automatic wraparound and justification, WP software, optional communications and telex interface.

The complete system will be available in the second half of this year for $3,995, the vendor said from 200 W. Landstreet Road, P.O. Box 13457, Orlando, Fla. 32859.

Mailway Now Accessible by Phone

LOWELL, Mass. — Wang Laboratories, Inc. has announced that traveling users of its Mailway electronic mail and messaging system can now use teletype-compatible portable terminals to access Mailway from any telephone.

Mailway users can reportedly use TTY-compatible terminals either in their offices or on the road to dial-access a Mailway-managed asynchronous communications line at an appointed distribution center.

After providing a security password, the user will receive a printed index of mail residing in a mailbox, with the most recent mail listed first, the vendor reported. The user can then select items for printing, forwarding, copying or deleting.

Automatic software upgrades to Mailway Release 2.03 will be provided at no cost to those presently using Mailway Level III, the vendor said from One Industrial Ave., Lowell, Mass. 01851.

Tymnet's Ontyme Linked With 15 Vendors' Gear

SAN JOSE, Calif. — Tymnet, Inc. has announced that its Ontyme electronic message network has been enhanced to interface with the word processors and personal computers of 15 vendors.

They include Apple Computer, Inc.; Burroughs Corp.; A.B. Dick Co.; Dictaphone Corp.; Digital Equipment Corp.; Exxon Office Systems Co.; CPT Corp.; IBM; Lanier Business Products, Inc.; Lexitron Corp.; Micom Systems, Inc.; NBI, Inc.; Wang Laboratories, Inc.; Syntrex, Inc.; and Xerox Corp., a Tymnet spokesman said.

The system reportedly allows users of these small and mid-range machines to dial locally into the Tymnet network, connect to Ontyme and send and read Ontyme messages.

The user can also create message text on magnetic diskette off-line, load messages from diskette into Ontyme, send the messages and read incoming messages onto diskette or paper. Formatted text can also be sent and received in format.

The Ontyme message service costs $200/mo plus usage time, which ranges between $3.40/hour and $6/hour, the Tymnet spokesman said from 2710 Orchard Pkwy., San Jose, Calif. 95134.

Four Harris Impact Printers Built for Entry-Level Use

FORT LAUDERDALE, Fla. — The Harris Corp. has introduced four letter-quality impact printers.

The Harris Models 8730 and 8735 are entry-level serial impact printers. The units print at 35 char./sec. Models 8740 and 8735 feature printing speeds of 55 char./sec, the vendor said.

Models 8730 and 8740 are receive-only printers. The 8735 and 8745 are send/receive printers with integral keyboards consisting of a 46-key typewriter keyboard, a four-key control section and a 15-key numeric keypad, the vendor said.

All four units use a thimble printing element providing up to 128 char. each. The printers can accept paper up to 16-in. wide. Using a 136-col width, the printers can print at 10 char./in. Using a 163-col width, the units can print at 15 char./in. Pitch selection and high-resolution proportional spacing are standard features, the vendor said.

The prices are as follows: Model 8730, $3,790; Model 8735, $4,050; Model 8740, $4,690; and Model 8745, $5,490. The printers are marketed through Harris' Computer Systems Division, 2101 W. Cypress Creek Road, Fort Lauderdale, Fla. 33309.

Santec Offers Matrix Printer

AMHERST, N.H. — Santec Corp. has introduced an intelligent "infinite" matrix printer that is said to produce documents ranging in quality from draft to camera-ready. Letter-quality printing is performed at 30 char./sec to 54 char./sec, correspondence quality at 65 char./sec to 195 char./sec and draft-quality at 130 char./sec to 390 char./sec.

The Variflex Printer is said to incorporate up to 32 different typefaces or type sizes without a change of printing element and with a range of text formats. More than 100 type styles are currently available, including foreign languages, a vendor spokesman said. Printing is done on plain paper.

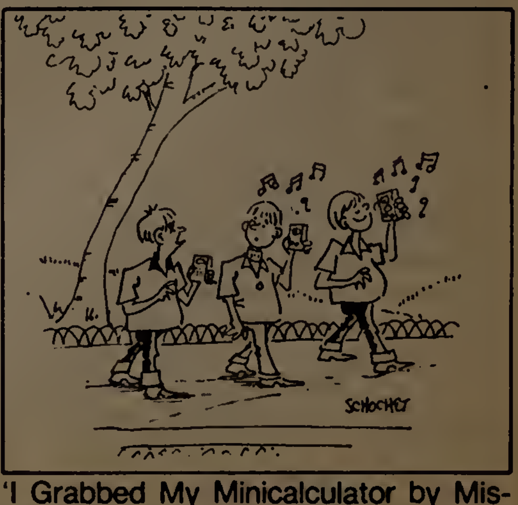
The printer is available for $3,995 from Santec Corp., 9 Columbia Drive, Amherst, N.H. 03031.

Stand-Alone Out For In-House WP

AUSTIN, Texas — A stand-alone computer system that reportedly provides in-house control of typical business accounting and word processing procedures is available from Charter Information Corp.

The System 4 business computer comes with applications packages said to provide in-house management control of order entry/invoicing, inventory, accounts receivable, accounts payable, payroll, general ledger, financial modeling, word processing and 1040 federal taxes.

The system is available in single or multiuser configurations and rents for $190/mo with an option to buy for $7,500, the vendor said from 2421 Rutland Drive, Austin, Texas 78758.



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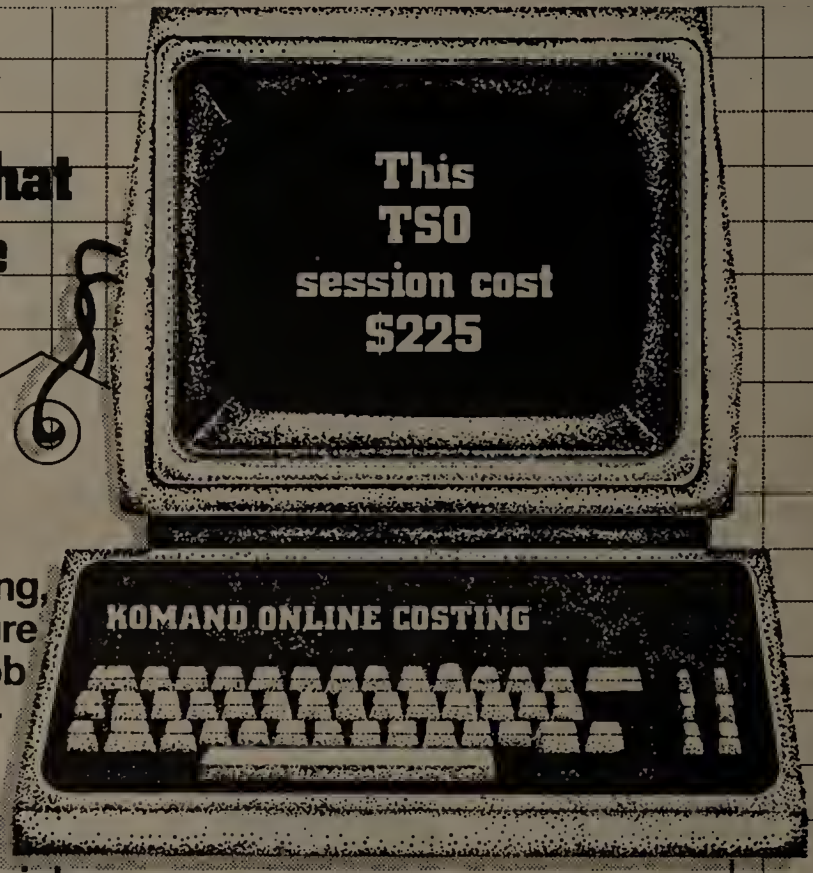

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'The Quality of Computers Isn't the Problem. Perhaps a Change in Your Company's Name Would Help, Mr. Glitch.'

Spanish-Language Version Of Spectra-Text Introduced

NORCROSS, Ga. — A Spanish-language version of the word processing system Spectra-Text has been released here by Intelligent Systems Corp.

The entire package has been converted to Spanish, including documentation, system menus and prompts, system commands and type fonts.

Spanish Spectra-Text has all the features of most dedicated WP systems, including automatic word wrap, global search and replace, automatic centering, automatic document paging, library mailing list files and footers and headers. The system can also perform underlining, boldface type, superscripts and subscripts. It uses color to highlight text for revisions, the vendor said.

The Spectra-Text System includes a full-color CP/M microcomputer with graphics capabilities, a disk drive, NEC Information Systems, Inc.'s Spinwriter printer, Spanish software — including the Spectra-Calc on-screen math program — and documentation.

The system costs $9,245, Intelligent Systems said from 225 Technology Park, Norcross, Ga. 30092.

Printer Outputs Letter Quality

ITHACA, N.Y. — The Bytewriter Division of Williams Laboratories has announced a daisywheel printer that is said to produce letter-quality output.

The Bytewriter is a specialized version of an Olivetti Corp. Praxis 30 electric typewriter. The unit can be used as a standard typewriter or can be linked to most personal computers for use as a printer, the vendor said.

Features include variable pitch selection of 10-, 12- or 15 char./in., a printing speed of 8 to 12 char./sec, an underlining feature and a self-test mode. The unit accepts a 7-bit Ascii Centronics Corp. parallel input.

The Bytewriter costs $795. Interconnecting cables for a variety of personal computers cost $35, the vendor said from 125 Northview Road, Ithaca, N.Y. 14850.

Three Faxes Out From NEC

NEW YORK — NEC American, Inc. introduced three high-speed facsimile systems here last week.

The Hi-Tech Collection includes the System II-D, a CCITT Group II facsimile device that is said to function as a printer and can send and receive data over phone lines from a word processor, telex, or terminal; the System III-C, CCITT Group III high-speed facsimile and intelligent copier; and a desktop System III-T facsimile, NEC said.

The price for the System II-D is $5,500, and $8,000 for the System III-T at the high end. Prices for the System III-C are not yet available. All systems will be available this summer. More information is available from NEC American, Inc., 432 Broad Hollow Road, Melville, N.Y. 11747.

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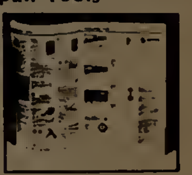

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French Software Firms Set Sights on U.S. Market

By Lois Paul
CW Staff

PARIS — French software companies have set their sights on the U.S. marketplace and DP managers can only gain by the increased competition and new infusion of products.

Among the French products being prepared for marketing in the U.S. are a human resource management package called GPX from Sopra; a data base management system (DBMS) from ECA Automation; and Byblos, a data dictionary product from Sligos-PLS. Already available in the U.S. are several packages that are being marketed through United Software Systems and Services Corp. (U3S). Based in Los Angeles, this company markets Atos, a retrieval package from Sligos, and Cortex, a DOS to OS conversion package from Sisro.

What can French software firms offer that U.S. firms do not? Some of the French vendors cite the portability of their packages, noting that because of the small French market for their products, they are forced to make them readily compatible with a variety of systems in addition to IBM. Most are approaching the U.S. market slowly

(Continued on Page 108)

French Switching to Packages Over In-House Development

By Lois Paul
CW Staff

PARIS — The "make or buy" decision of DP managers in France more often results in the development of in-house software than in the purchase of packaged solutions.

But this is beginning to change, as it did in the U.S. DP industry a number of years ago. The switch to packages is being spurred by the growth of more complex, real-time applications, which in-house developed systems have difficulty handling. Another major reason for the switch is the age-old problem of finding experienced DP professionals.

The trend toward software

(Continued on Page 104)

CW Photo by L. Paul

Bernard Pincemaille

Software AG Realigns Top Management

By Marcia Blumenthal
CW Staff

RESTON, Va. — Poor profit performance for the past three quarters appears to be the reason for a realignment of top management at Software AG.

The firm recently announced the resignations of Executive Vice-President Kenneth D. Rardin and Chief Financial Officer John V. Okulski. Although John Maguire, the firm's chairman and president, said the two executives resigned, he suggested there was a personality conflict between him and one of the executives.

"I am looking to beef up the managerial talent of this company," Maguire said. For the immediate future, Maguire will assume most of the line responsibilities formerly handled by Rardin.

In particular, Maguire blamed a lack of budgetary control and planning for the firm's current financial situation. Costs were getting out of control and sales support people were being hired at levels higher than necessary for the current sales volume, Maguire explained.

Layoffs Shave Costs

To shave these costs, Maguire said, the firm has laid off about six people in the support organization. Moreover, the company has scrutinized its sales force and is in the process of replacing four members of its 30-member sales force.

Maguire is currently reviewing the operation of the entire company. "Being a public company has helped us focus on efficiency and profitability a lot more than when we were a private company," he observed.

The firm earned $1.4 million in its first three quarters. "This is not acceptable," Maguire stated. For fiscal 1981, the company

(Continued on Page 103)

Cray Chairman Claims Lead In Supercomputer Industry

By Bob Johnson
CW New York Bureau

NEW YORK — Cray Research, Inc. has at least a three- to five-year lead in the supercomputer industry, according to the company's chairman, president and chief executive officer, John A. Rollwagen.

Speaking at a recent meeting of the New York Society of Security Analysts, which came on the heels of Cray's announcement of its newest computer — the X-MP [CW, May 3], Rollwagen maintained that Cray's products have become the standard for large-scale computing capabilities.

Despite a current slowdown in production for the first half of this year, Cray will focus on revenue growth in 1982-1983, with expectations for a 30% growth in revenues, Rollwagen said.

Rollwagen's Optimism

Rollwagen's optimism stems from his belief that Cray leads the industry in supercomputers because of the technology that the company has developed and its dedication to continuing research. He said the company is targeting an expenditure of 15% of revenues to be put into research and development in the near future.

"The Japanese [industry], with the help of their government, expect to produce a computer with six to seven times the processing power of the Cray-1 by 1990," Rollwagen said. But, he

(Continued on Page 103)

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Plan Proposed to Pump Up Mass. Semi Industry

BOSTON — The Massachusetts state government, in concert with high-technology companies and engineering schools, is proposing the establishment of a $40 million microelectronics center to pump up the state's semiconductor industry and technological education.

The plan, revealed late last month, calls for the filing of legislation to establish the Massachusetts Technology Park Corp., funded by $20 million raised through a bond issue. The remaining $20 million would be raised by the state's numerous high-technology firms in the form of money, teaching staff and donated equipment.

George S. Kariotis, the state's secretary of economic affairs, sees the proposal as a defensive move to compete with semiconductor production in California and a microelectronics center established in North Carolina. In addition, the concept is seen as a means of training engineering and computer science students.

Although details of the proposal are still spotty, several companies have indicated support for the center. Sperry Univac's Research Center has said it would participate in the project. Other firms, such as Wang Laboratories, Inc.; Analog Devices, Inc.; and M/A-Com, Inc., participated in the planning of the center. Digital Equipment Corp. is said to be close to making a firm commitment to the center.

Software AG Realigns

(Continued from Page 101)
had earnings of $2.4 million on revenues of $18 million. Although the company expects its revenues to hit the $25 million mark for its current fiscal year, which ends May 31, Maguire said analysts are forecasting that earnings will not surpass last year's and may be lower than 1981 earnings.

To get the financial side of the business back on track, Maguire recently hired Lloyd Brubaker as senior vice-president and chief financial officer.

Prior to joining Software AG, Brubaker was a vice-president of Swift and Co. and general manager of its Dry Grocery Division. He has held executive positions in financial planning, administration and management information systems and was a former salesman for IBM.

Maguire expects to bring one more high-ranking executive on board in the near future.

Cray Claims 'Super' Lead

(Continued from Page 101)
noted that the Japanese are traditionally overly optimistic. More importantly, that proposed machine may not be powerful enough for the requirements of the 1990s, he said.

Cray's 10th Anniversary

Calling attention to the fact that Cray is celebrating its 10th anniversary, Rollwagen confirmed the company's market strength. He said that there is definitely a universe of businesses that require the processing power of the Cray machines.

The scientific and oil industries are two major users of Cray equipment because experimental work is done much more efficiently on computers than in "real life."

Although Cray still holds its position in its highly scientific markets, Rollwagen explained that he sees a "broadening scope."

He said that of 32 current potential customers expected to sign contracts for machines, 14 are in the commercial sector and five are in government.

Technological developments are a key to Cray's future. One of these technologies is liquid emersion, which speeds up processing power and is the basis of the projected Cray-2 computer.

The Cray-2, Rollwagen said, is expected to have six to 12 times the capabilities of the Cray-1 but is nearly two years away from delivery.

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French DP Managers Switching to Packages

CW Photo by L. Paul

Xavier Daras

(Continued from Page 101)

package development apparently has the full blessing of the French government, which sees packages as an easily exported commodity.

Software packages comprise only about 5% of the sales volume for all companies in the software industry, according to members of the Information Processing Division of Syntec, an association of French engineering firms, which is somewhat similar to the Association of Data Processing Service Organizations, Inc. in the U.S. The remaining 95% is divided almost equally between professional and data services in terms of development and sales.

"The most important computer services companies in France are providing professional services," Bernard Pincemaille of the Ministry of Industry explained. "When they develop a good application, they sometimes transform it into a software product. But there are not really companies that are developing only software products."

Market Choosing Packages

Xavier Daras, director of Centre D'Experimentation De Progiciels (CXP), a French association of DP users and software suppliers, noted "The market is going very quickly toward choosing packages, particularly in several classes such as payroll and accounting." He explained that there are a lot of U.S. systems software products available in France, but not many applications packages. The latter are more difficult to import because of the obvious language differences. This is compounded by the difference between the U.S. and France in overall company structures and in the rules and regulations governing industries such as banking.

Many French companies will choose a U.S. software package over a French package, Daras explained, because they feel the choice involves less risk. "They are not the first ones [to use the package]." Being able to develop a sizable user base is one reason French software companies want to sell their products in the U.S. French users will then be more receptive to packaged products if French firms can point to a large block of U.S. users.

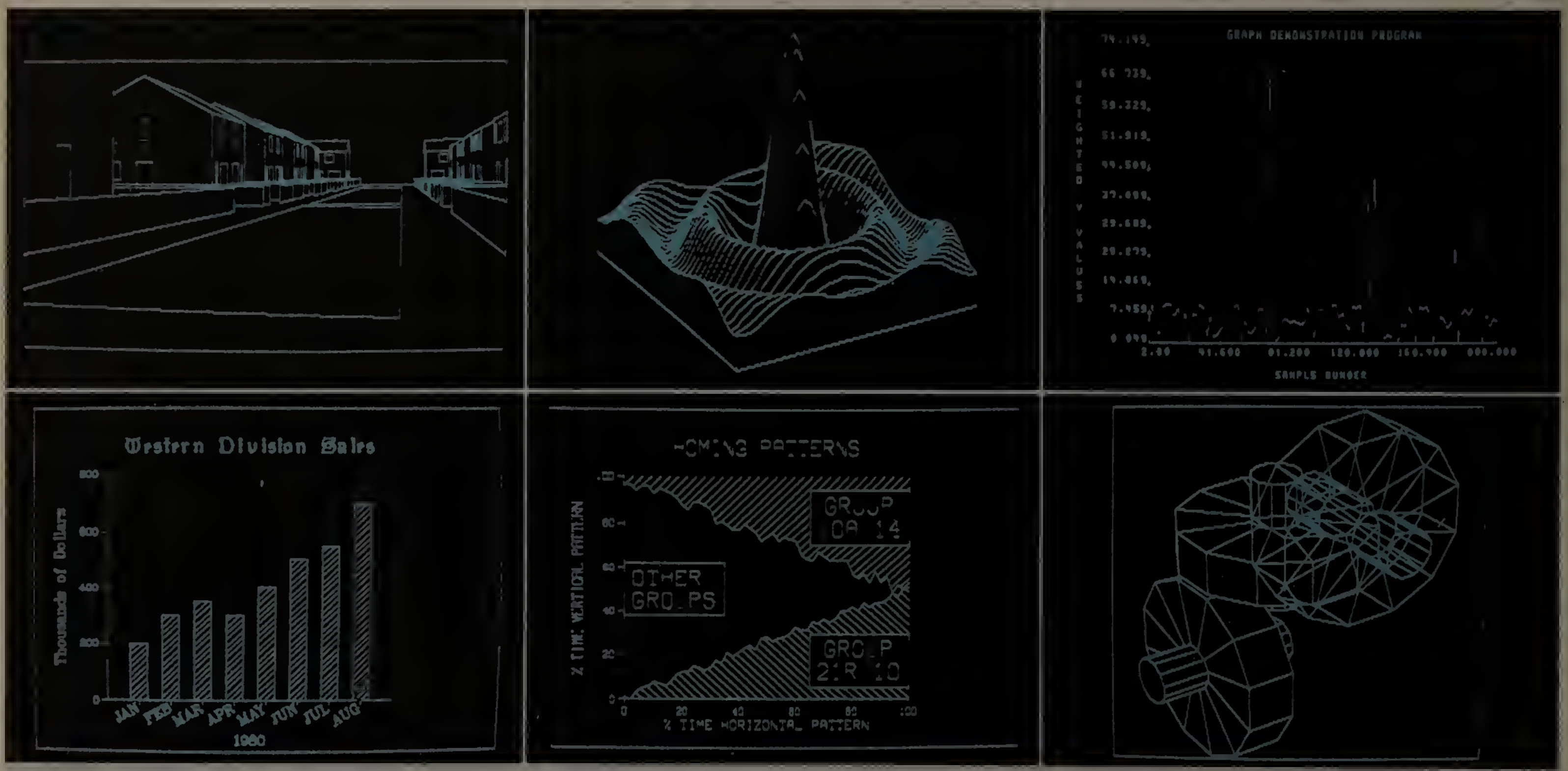
The growth of CXP itself, which is a research and information center set up by and for users of software packages and DP systems, is an indication of the growing importance of packaged software in France. The nonprofit organization was created in 1973 by eight companies, and its services were used by 400 companies and government agencies during 1981. CXP publishes a three-volume product directory that lists software packages available in Europe, a directory for microcomputer software packages available in Europe and a word processing reference book.

Nationalization Possible

With the recent announcement that the holding company for CII-Honeywell Bull has bought out the majority of U.S. Honeywell, Inc.'s interest in this firm (all but 19%), French software vendors must face the possibility of nationalization of the software industry.

Most of the firms seem to feel there is no way the government can force nationalization of the software companies. Few of these mostly independent companies depend strongly on large government contracts.

Within France there is much nationalistic fervor and enthusiastic talk about France being second in the world software industry, second only to the U.S. Most in the industry admit, however, that the plans and projects of the Mitterand government, which is now a year old, have not yet gotten underway. "This too will pass" describes the general attitude toward the government, suggesting the next government will have new trends and policies.



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Service Firm Exec Believes Packages Not the Answer

By Lois Paul
CW Staff

PARIS — Although most vendors in the software and services industry here agree the trend favors packaged software solutions rather than in-house development, the vice-chairman of one of the largest professional services firms here adheres to his belief that packages are not the answer.

Philippe Dreyfus of Cap Gemini Sogeti believes there has been a bias toward packages in the worldwide press that has led to distortion in market analyses. "Consultancy does not get exposure," he said.

"There is a sort of psychological thinking that professional services do not expand as rapidly as packages and as data services, whereas they do," he said.

"Governments are all concerned with balance-of-payment problems, and are eager to see packaged software exported," he continued. "The second reason for emphasis on packages is small businesses using microcomputers. They cannot afford tailored software."

He pointed to the difficulties involved in selling packaged software in different countries. In Europe, each country sells software for IBM systems, plus at least one local manufacturer, such as CII-Honeywell Bull in France. Therefore, it is necessary for the software to be more portable and to include additional interfaces for various operating systems, in addition to the language difference. This does not apply to system software or in computer-assisted design or manufacturing (CAD/CAM) and engineering packages, he noted. However, in application software these problems emerge.

Another major difference, he noted, is the cost of advertising in various languages and in the different styles of the many and varied trade journals serving each country. "The costs of development and sales are tremendously higher. There is much slower penetration and less profit," he maintained, "because the firms still have to compete."

Another problem Dreyfus foresees is the loss of various cultures through the emphasis on homogenized packaged software, most of which is based on the U.S. culture in order to address the largest market for these products. "It is almost a political question. Will we give up our culture because of the computer?" he asked. Dreyfus pointed to the lack of accents in American character sets for computers. These are necessary elements of the French language and the question remains whether the French will be willing to give these up in order to improve their position in the world DP industry.

CW Photo by L. Paul

Philippe Dreyfus

French to Host Software Show

PARIS — As an indication of the growing importance of software in France, a special exhibition dedicated to software will be held here next spring. The show will be separate from, but sponsored by, the same organization that produces Salon International de l'Informatique de la Communication et de l'Organisation du Bureau, the huge data processing show that is held here each fall.

The software show is expected to be large and highly specialized, focusing on packages and geared to end users. Sponsors hope the international show will attract U.S. exhibits.

Details for the show have not yet been released. However, further information can be obtained by contacting Jeanne Poyen, delegate for Convention Informatique, 6, Place de Valois, Paris, France.

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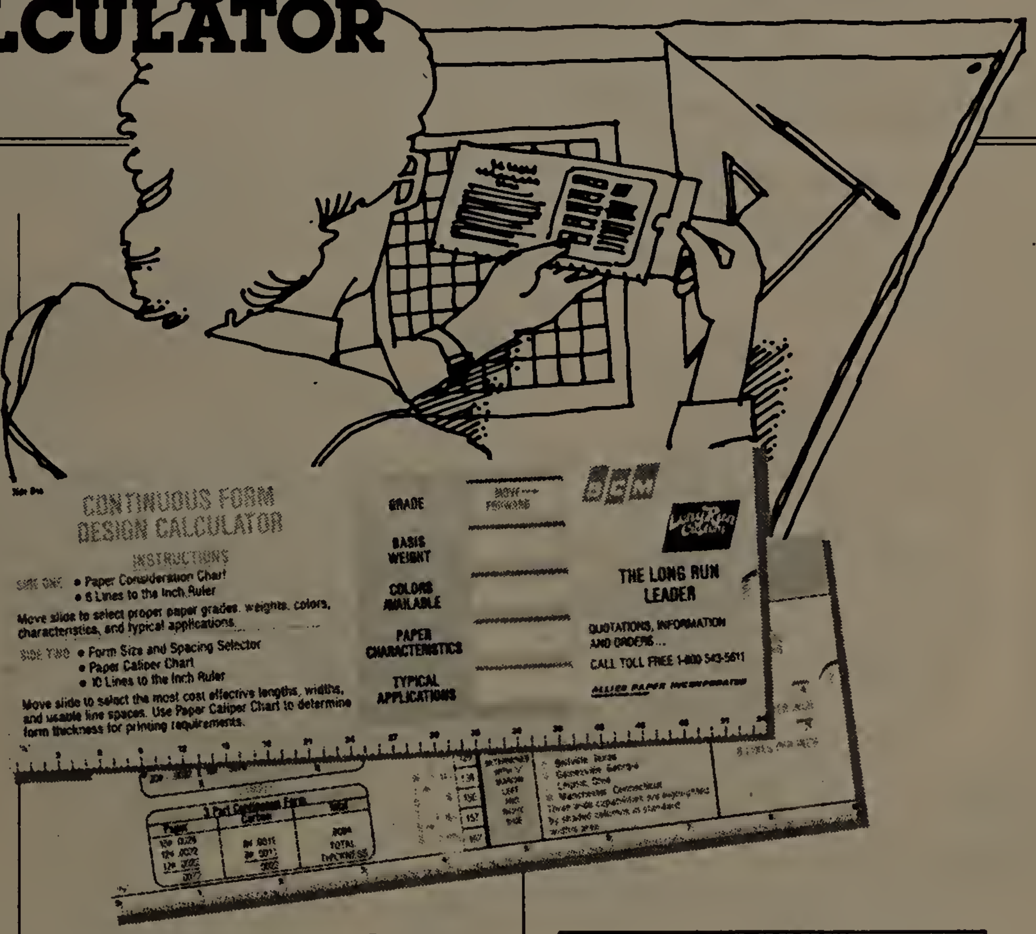
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Chaotic Software Market Seen Hampering Use Of Micros in Big Firms

By Robert Batt
CW West Coast Bureau

BURLINGAME, Calif. — The confusion and chaos characterizing the microcomputer software industry is hampering the use of microcomputers in large corporations, according to a study to be published this month by Somerset and Associates here.

"Microcomputer Software for the '80s" also claims the poor quality of software on the market, cited by dealers as a major problem, has alienated professionals interested in improving productivity. As a result, the professional end user, potentially vast in numbers, often exhibits a wait-and-see attitude.

"There are major communication gaps to be filled. This is not atypical of an emerging industry. The threat, however, is that each market segment, from hardware manufacturers down to software authors, will continue in an autonomous line at a rapid pace, ignoring the critical links connecting one to the other."

In particular, the report noted these communications gaps are prevalent between the dealer and the end user and between the software author and the hardware vendor.

A spokesman for Somerset and Associates added: "Everyone is overloading the dealer. He does not have the information or resources he needs to support the end user, yet support is the major requirement the end user has."

The spokesman said that as a result of this lack of support, large corporations are trying to figure out what to do with micros. The report details a program for bringing micros successfully into the office environment. It is the communication gaps that are stopping this from happening.

"If we take a look at one key issue — portability — we see an example of the confusion that permeates the microsoftware industry," the spokesman said.

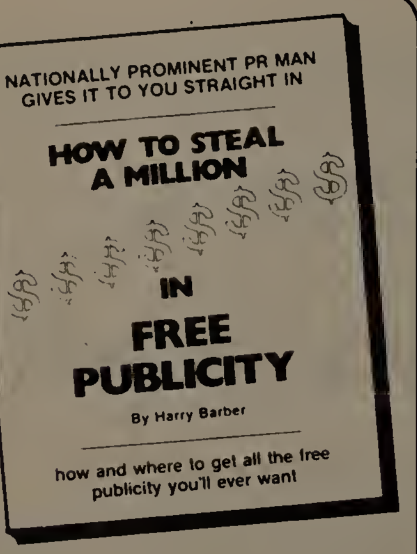
The independent software author, the report states, looks at portability from a development standpoint. Typically, he considers features and benefits more important than portability and expects the hardware manufacturer to do the same. The hardware manufacturer, however, is taking his cue from the dealer who, in turn, is attempting to respond to the demands of the end user.

"The primary consideration for the end user in choosing a dealer is the dealer's ability to support the product he sells. If the software is portable from machine to machine, then he can reduce his inventory. With fewer products on the shelf, support becomes a reality," the report adds.

The fact that software sells hardware and is sold by dealers has forced hardware vendors to pursue portability strategies, the report claims. "The problem here is educating the software author and potential authors in the marketing value of portability. That way, when hardware manufacturers go on the road for applications, there will be some established criterion for selecting the right package."

The report accused software authors of being ignorant of the end user's need of support. "The profile emerges of an author who wants the tools to take advantage of the latest technology, who somehow believes that as long as there are great numbers of applications on the market, he will be safe."

More information on the report can be obtained from Somerset and Associates, Suite 300, 111 Amza Blvd., Burlingame, Calif. 94010.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Citizens Organize Committee To Halt Micro Claims

SAN FRANCISCO — A citizen's action committee was formed here recently to halt what it called the "bandwagon effect" being stimulated by the microcomputer industry, which advocates a computer in every classroom.

Called the Committee on Basic Skills Education, the group will focus on stopping the claims of microcomputer makers that "computer literacy" will solve the ills of the educational system.

Although the group concedes there is a place for computers in the classroom, it argues that it is not a replacement for basic skills education.

"This is overkill at its worst, and someone has to begin questioning it before massive sums of money are spent prematurely," according to Dr. Daniel A. Peck, professor of education at San Francisco State University and a founder of the committee.

The microcomputer industry is guilty of using "scare tactics" to intimidate the educational system into spending millions of dollars on unneeded equipment for elementary grades, the group contended.

"This year our nation's schools are anticipating spending approximately 15% of their instructional materials budgets on computers," Eric Burtis, another committee representative, said.

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Japan Challenges IBM With Micro Look-Alike

Special to CW

SYDNEY, Australia — Japan, Inc. has thrown down the gauntlet to IBM with the release of what is claimed to be a fully compatible IBM Personal Computer look-alike. The microcomputer was released here late last month to coincide with a release at the Hannover Faire.

Matsushita Industrial Co. Ltd. said that its Panasonic Co. JB3000 runs the IBM Personal Computer operating systems. Supports for X.25 and Systems Network Architecture (SNA) will be announced within two weeks. Volume deliveries will start this month from a totally robotic factory said to be capable of outputting 70,000 units a month.

An Australian company, the Computer Company Pty. Ltd., will market the Panasonic here both to DP users for distributed data processing (DDP) applications and through dealers and retail stores.

The Computer Co. believes the Panasonic will change the way DP users think about DDP through its stand-alone computing capabilities and its communications support, all for a cost of about $5,250.

The Panasonic JB3000 matches the IBM Personal Computer in almost every feature, but has a larger memory, greater storage and a slightly larger screen. Like the Personal Computer, it is based on Intel Corp.'s 8088 16-bit chip and runs Microsoft, Inc.'s DOS and CP/M-86 operating system.

The JB3000's main memory ranges from 96K- to 256K bytes with 32K bytes reserved for graphics. On-line storage is comprised of twin 5¼-in. floppy disk drives, giving 160K bytes of formatted capacity each.

France Eyes U.S. Market

(Continued from Page 101)

and carefully, determined to build their customer base gradually and to develop a strong group of satisfied users.

The majority of the firms will continue to provide professional services to support their operations until their package sales take off and then will put more of their development money into this end of their business.

Pacha is Sopra's personnel package that has received International Computer Programs, Inc.'s $5 million-dollar award for sales in Europe. The firm has totally revamped this product and it will be marketed in the U.S. under a new name, GPX, beginning in January 1983.

GPX Said Based on PX

Serge A. Paravisini, director of U.S. operations for Sopra, explained that GPX is based on PX, a tool designed to enable reuse of code and software modules to produce applications software. Such applications include GPX for personnel management and future products include CFX for financial management and IMX for inventory management.

He claimed that any version of GPX can be converted to any mainframe within three months at the most. The firm is willing to guarantee that the final product will be bug free and that, free of charge, it will be converted to any future system the user may purchase.

GPX will be marketed in the U.S. through a direct subsidiary of the French parent firm, Sopra Corp., which will be incorporated in the last quarter of 1982.

ECA Automation's Products

Eria-ECA Automation, a subsidiary of Thomson-CSF, is preparing to launch Clio — an IBM-compatible DBMS — in the U.S. marketplace. Also available on CII-Honeywell Bull Level 66, DPS 7 and Level 6 equipment and on minicomputers from Sperry Univac and Siemens Corp., Clio will be marketed through U3S beginning the second half of 1982.

Based on a hierarchical and network model, Clio includes a query by example facility and a data manipulation language that can be used at compile time as well as runtime, according to Jean-Luc Badault, marketing manager for ECA-Automation.

ECA Automation also is working on developing a programmer's workbench concept of tools for use on 16-bit microcomputers, Badault explained. These will include assemblers, link editors and symbolic debuggers. The firm also is rewriting Bell Laboratories' Unix operating system in Pascal to make it more portable.

Sligos to Market Byblos

Sligos is planning to introduce Byblos, a data dictionary for IBM's DL/1 and other vendors' DBMS packages, beginning in September 1982. Unlike Atos, which was developed for the French market and, after success there ($1 million-dollar ICP award in 1982), was repackaged for the U.S., Byblos was developed directly for the international marketplace, according to the firm's director.

It will be marketed in the U.S. by U3S, which already is handling distribution of Cortex, a DOS-to-OS conversion package from Sisro, and Atos, a retrieval package from Sligos.

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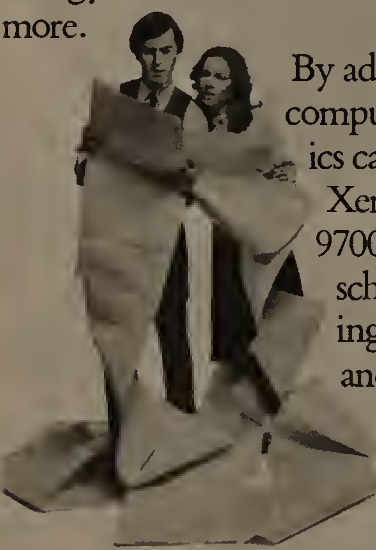

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Supershorts

Donald L. McIntosh, senior vice-president, finance and administration, was elected to the board of directors of NCR Corp. He replaces Nicholas F. Brady who withdrew his name from nomimation because of his recent appointment as a U.S. senator from New Jersey.

— — —

Durango Systems, Inc., a supplier of computer systems to independent insurance agencies, has formed an insurance division to market and support its agency management systems and other insurance software.

— — —

Omni Exploration, Inc. will enter the computer information services industry by offering an extensive range of software programs to the oil and gas industries and to sponsors of limited partnerships through a wholly owned subsidiary based at Omni Exploration's Radnor, Pa., corporate headquarters.

— — —

Maryland Casualty Co. plans to purchase the Commercial Lines Systems Division of Insurance Systems of America, Inc. The division, which develops and markets computer applications software for the processing of commercial lines insurance policies, will remain in Atlanta and will be operated as an independent unit of Maryland Casualty.

— — —

Electronic Data Systems Corp. has entered the field of commercial remote computer servicing with the acquisition of the banking sevices portion of the Automated Customer Services Division of Republicbank Dallas.

— — —

Apple Computer, Inc. has terminated its central buying agreement with Computerland retail stores. Computerland dealers will reportedly be able to buy products from Apple under individually negotiated contracts.

— — —

Intel Corp. has signed a $4.8 million agreement to purchase 20% of Computer Memories, Inc.

— — —

Decimus Corp., a subsidiary of Bankamerica Corp., has signed an agreement with the Shawmut Bank of Boston to produce an expanded line of data processing services for Shawmut's Corresponding Banking customers.

— — —

Siemens Corp.'s Siemans AG in Munich, Germany, has consolidated its small computer and process computer operations into a middle-range technology division.

New Companies

The **United Software Co.** is involved in the development and marketing of a series of application standard programs — the total management/marketing planning system. It is located at 1701 E. Kellogg, Wichita, Kan. 67211.

Data Star Systems, Inc. specializes in Digital Equipment Corp. PDP-11 and VAX-11 systems and is located at Suite 200, 25251 Paseo de Alicia, Laguna Hills, Calif. 92653.

Barrister Information Systems Corp. was formerly the Office Automation Division of Comptek Research, Inc. Barrister Information Systems offers law firms a wide range of software applications including word processing, financial management, litigation support and records management. The company will operate at Comptek's headquarters at One Technology Center, 45 Oak St., Buffalo, N.Y. 14203.

Jupiter Systems, Inc. specializes in the development and manufacture of a line of color graphics terminals. It is located at 2126 Sixth St., Berkeley, Calif. 94710.

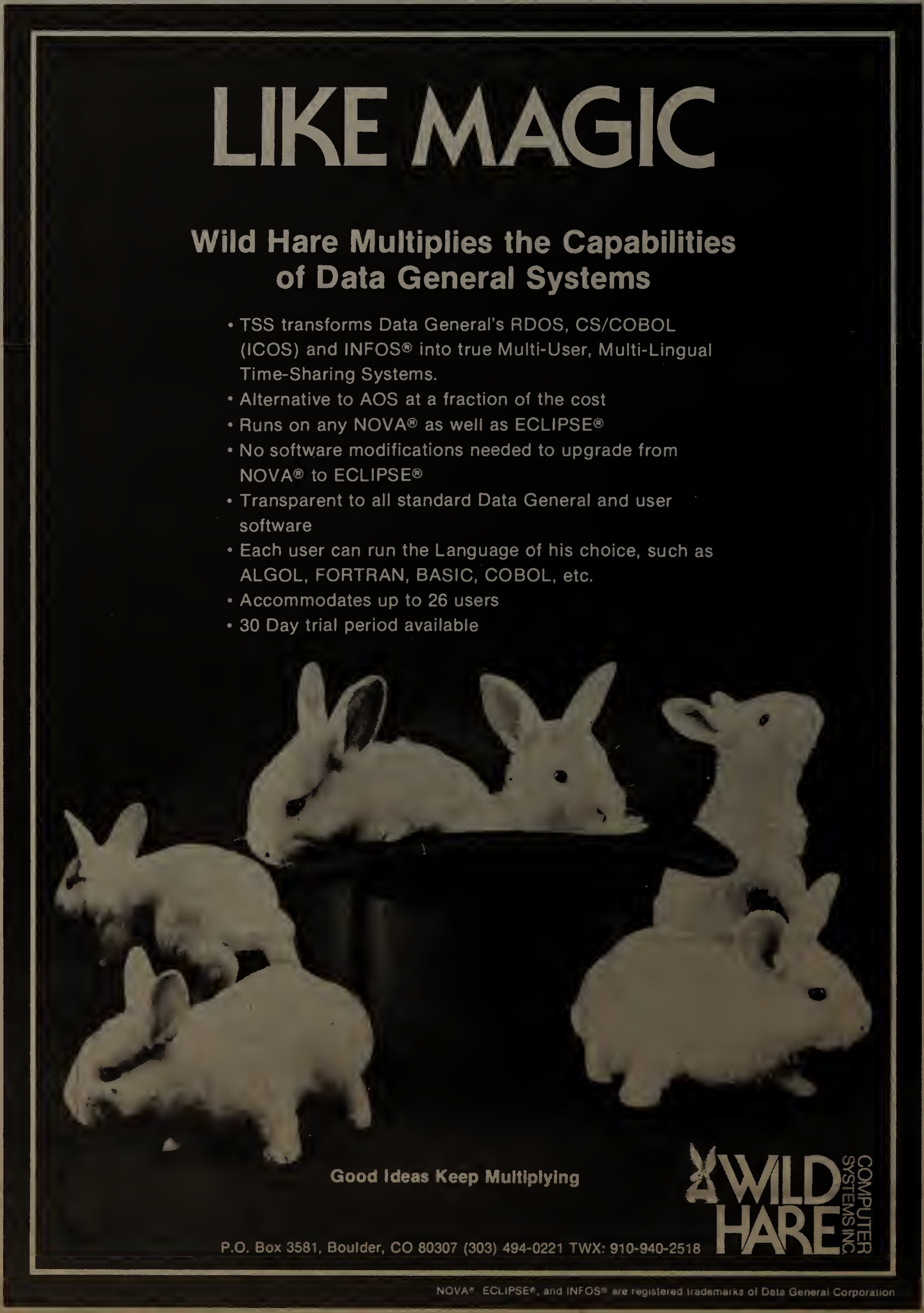
Software Plus, Inc. provides a complete line of software products and services to users of small to medium-size IBM computers. Software Plus is located in the Meadows Office Complex, 301 Rt. 17 N., Rutherford, N.J. 07070.

Pace Data, Inc. will develop, maintain and distribute programs and programming services for IBM System/23, System/34 and System/38 users. It is located at Suite 340, 22900 Ventura Blvd., Woodland Hills, Calif. 91364.

Software Systems, Inc. specializes in commerical applications for the smaller Digital Equipment Corp. computers, particularly DEC's PDP-11, Decmate models. Company offices are at 15 Spinning Wheel Road, Hinsdale, Ill. 60521.

RRR Computers, Inc. (3R) will design, manufacture, market and service desktop computer systems for science, industry and business. 3R is located at 18 Lyman St., Westboro, Mass. 01581.

Academy Computer Services, Inc. provides software and consulting services for all types of computer users. It is located at Suite 235, 4080 Woodcock Drive, Jacksonville, Fla. 32207.



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And the Series 800 drives down the cost per calculation. So you can handle more computations per computing dollar than ever before.

The Series 800 also delivers on a Control Data commitment: to give our customers expanded capabilities, with all the benefits of *proven* hardware, software and support – all conversion-free.

Software compatibility.

If you're a Control Data customer, you can upgrade to the Series 800 and protect your investment in application software.

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Series 800 systems give you four to eight times more memory than the maximum on the Series 700 systems. Even the compact, air-cooled 825, the smallest 800 system, offers you a central memory of from 262 thousand to 1 million 60-bit words, to handle applications from seismic processing to CAD/CAM.

Four other 800 systems let you build even larger central memories, and grow to meet future needs efficiently, economically.

Reliable and maintainable.

Series 800 architecture, software and support services are all proven in use. Series 800 systems, installed and tested with Control Data customers around the world, have already confirmed improved reliability. As for maintainability, our Remote Technical Assistance feature can often solve problems in minutes, instead of hours or days.

The bottom line: faster, more cost-effective computing for major industry applications.

With the new Series 800 systems, Control Data gives you the power – and the application programs – you need right now.

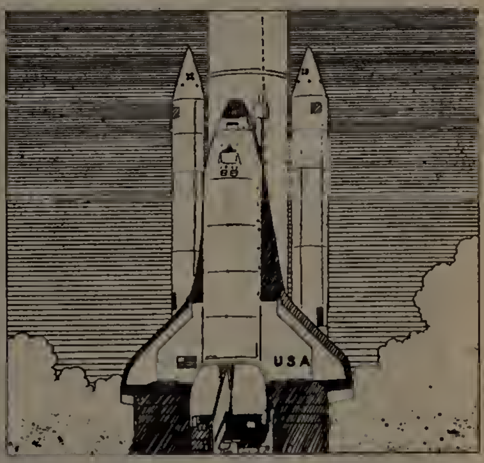
In manufacturing, we deliver integrated CAD/CAM capabilities that very few other systems can offer. In the petroleum industry, we put fast, accurate seismic processing and much more at your service.

For electric utilities, Series 800-based applications handle complex power generation tasks simply and easily. For weather forecasting, you get the memory and speed you need to run advanced numerical prediction and image processing programs.

And for colleges and universities, we make it possible to process everything from complex research through student instruction.

And now our PLATO® computer-based training system runs side by side with your other applications, to deliver education and training for business and industry, as well as for the academic community.

All of these capabilities are available today – without conversion – to Control Data customers. All are available today to new customers, who need power and performance without the fear of future obsolescence.



Call your local Control Data sales office today for an immediate briefing on the outstanding capabilities – and benefits – of the new CYBER 170 Series 800.

CONTROL DATA

Addressing society's major unmet needs as profitable business opportunities

Executive Corner

- Ernest Wong has been appointed president of Rotating Memory Systems, Inc.
- Kenneth M. Smith has been elected president of E-Systems, Inc., and Robert S. Buzard has been named vice-president and general manager of the company's Commercial Division.
- John L. Corse has been named president of PRC Realty Systems, Inc., a division of Planning Research Corp.'s PRC Computer Systems.
- Rick Eriksen has been named president and chief operating officer for Data Star, Inc., and Tom Girskis has been appointed executive vice-president of the company.
- Thomas W. Hubbs has been named vice-president of finance and administration for Ungermann-Bass, Inc.
- Fred Pood and Bruce Van Natta have been named to the newly created posts of senior vice-president at Micropro International Corp.
- Jon E. Cornell will head up Harris Corp.'s new semiconductor products group as vice-president, group executive.
- Douglas E. Salmon has been promoted to vice-president of the commercial sales organization for the Data Services Operations of Informatics, Inc.
- John E. Bohlander has been elected senior vice-president of administration and Thomas C. McKessey has been elected senior vice-president of finance and treasurer of Grumman Data Systems, Inc.
- Russell P. Saunders has joined Denelcor, Inc. as vice-president of North American sales.
- Thomas R. Ramsey has been appointed vice-president of development at Executec Corp.
- Clinton L. Bull has been named to the newly created position of vice-president, dealer marketing, for Burroughs Corp.'s Business Machines Group.
- Lawrence Perlman has been named vice-president and general counsel of Control Data Corp.'s new corporate services organization, and Earl D. Jacobsen has joined CDC as marketing vice-president.
- Charles J. Palmer has been appointed vice-president of Eastern sales operations and Norman R. Neuman Jr. has been named vice-president of product development for commercial services businesses at Comshare, Inc.
- Ernest G. Bago has been promoted to vice-president for communications industry marketing for Infonet, the international remote computing service of Computer Sciences Corp.
- Emmett Johnson has been appointed vice-president of operations and Jerald H. Mortenson has been appointed vice-president of finance and administration at Fabri-Tek, Inc.
- Arthur Peltosalto has been elected chairman of the board and Thomas E. Stone has been elected president and chief executive officer of Tesdata Systems Corp.
- John J. Splavec has been appointed president of Softech Microsystems, Inc., a wholly owned subsidiary of Softech, Inc.
- Adolf M. Cosentino has been appointed president of EECO Computer, Inc., a wholly owned subsidiary of EECO, Inc.
- Robert S. Ratner has been appointed vice-president, Systems Consulting Division of SRI International, Inc.
- Sol Zechter has joined Emulex Corp. as vice-president of marketing, a newly created post.
- Joe Marolda has been promoted to vice-president of customer service by Printex, Inc.
- Stephen E. Arnold has been elected vice-president for marketing at Data Courier, Inc., a subsidiary of the Courier-Journal and Louisville Times Co.
- James L. Magruder has been appointed vice-president of operations at Uninet.
- Paul Bell has joined The DMW Group as vice-president of financial services, industry practices, Eastern region.
- Robert W. Camp has been elected an executive vice-president of Atex, Inc.
- Edware M. Boe has been promoted to chief operating officer and elected to the board of directors of Quadrisec, Inc.
- Gaynor N. Kelley has been promoted to executive vice-president, Optical Group and Metco subsidiary; Melvin W. Redmond has been named senior vice-president, Instrument Group; James P. Gregory has been promoted to senior vice-president, administration; and Michael D. Moore was elected a vice-president and named manager of the Instrument Group, Connecticut operations, at Perkin-Elmer Corp.

Mergers & Acquisitions

Allegheny International's subsidiary, **Kennedy Co.,** has agreed in principle to purchase **BASF Systems Corp.**'s 8-in. Winchester disk drive product lines along with the 40,000-sq-ft manufacturing facility in Los Gatos, Calif., for an undisclosed sum. Kennedy will continue to supply drives to customers and will also manufacture and market the BASF 5¼-in. disk drive in the U.S. under license from BASF in West Germany.

Infontecs, Inc. has signed a letter of intent to merge with **Computone Systems, Inc.** for a still-to-be-determined amount of Computone common stock.

Equivest, a data processing and communications equipment leasing company, has merged with **Applied Technology Ventures,** a California general partnership. Equivest joins the ATV Office Information Group consisting of Computer Leasing, Inc.; Findex, a desktop office computer company; Digital Scientific Corp.; and ATV Jacquard, formerly Jacquard Systems Division of AM International, Inc.

Adage, Inc. has signed an agreement in principle with **Fulcrum Computer Group, Inc.** and the holders of 71% of Fulcrum stock for the acquisition of Fulcrum. Under the terms of the agreement, 205,000 shares of Adage common stock would be exchanged for all of the approximately 14 million shares of outstanding Fulcrum common stock.

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Unique Approach

Firm Tries Personal Computer Transformation

By Robert Batt
CW West Coast Bureau

TORRANCE, Calif. — Although the concept of "a personal computer on every manager's desk" has been around for quite some time, it has yet to prove itself as an idea whose time has come.

One company that is attempting such a transformation is Context Management Systems, Inc., a newly formed enterprise whose target is the Fortune 1,000 companies.

Formed by two former Booz Allen and Hamilton consultants last October, Context claims a unique product and marketing approach in second-generation personal computer software..

Gib Hoxie, Context's president, sees the personal computer as a means of freeing managers from the restrictive practices of management information systems (MIS) departments and giving them greater access to the information they want.

"It is our belief that the growing number of computer languages and software commands is a major obstruction to the productivity of managers. Data processing professionals who now control information are reluctant to allow others in and so we are attempting to put a translator between the department manager and the information he needs," he said.

The key to Context's approach is a product called the Master of Business Administration (MBA) program. According to the company, the program is unique because it combines electronic spreadsheet, word processing, data base, graphics and communications capabilities into an integrated system.

Designed for use on the IBM Personal Computer and Apple Computer, Inc.'s Apple II, Context claims the MBA is easy to use because all programs use similar commands. "Users no longer need to load different program diskettes to switch from modeling to word processing or from data base to communications. The user's data is saved and the MBA lets the user work with the data in whatever context he or she selects," Hoxie added. Up until now, while all of these capabilities have been available, they were only available in isolation from each other, Context claimed.

A simple command language controls the MBA. Three keystrokes are all that is needed to switch between the various modes and, according to the company, this switching capability means that users only need to learn a few commands.

The command language used is similar to the slash commands used in Visicorp. Inc.'s Visicalc. Hoxie claimed Visicalc users will be able to master the MBA in a matter of hours. "In-depth documentation will allow total novice to personal computers to start producing useful reports and data within 12 hours," he claimed.

Market Approach

Apart from the product itself, the company also emphasized the way in which it expects to market it. "We believe this product and the manner in which we will distribute it will establish a precedent in the personal computer industry.

"Products like the MBA need the support of well-trained, highly motivated retailers and so we are going to require our sales people to complete a sales training course and pass a test of proficiency. This is somewhat revolutionary for the personal computer industry," Martin Manzer, marketing vice-president, said.

Although Context systems will be selling for under $700, the company admits its dealer strategy is necessarily long-term and therefore a restraining factor on growth. Initially, Context intends to concentrate sales around major metropolitan areas such as New York, Los Angeles and San Francisco.

WHAT IS THE TRUE COST OF A DISKETTE?

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Confused? It's simple. The minimum cost of a one-sided, single density 8" diskette equals the purchase price plus the cost of the time to fully load the data onto the disc*. The adjacent diagram tells the story. As you can see, the purchase price of a diskette is a small fraction of the total cost of ownership. So why not pay a few cents more for the best diskette available?

That's where Dysan's quality comes in. Dysan diskettes and mini-diskettes are manufactured to the toughest quality standards in the industry. Every diskette is tested between the tracks as well as on the tracks to insure you 100% error-free recording over the entire disc surface. Dysan quality protects your investment of $186.50.

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*$4.00 represents Dysan's suggested retail price for a one-sided, single density 8" diskette, packaged ten to a box. Minimum total cost of ownership — $186.50

*$182.50 represents the cost of data loading (approximately 22 hours at 11,106 keystrokes/hour at a labor cost of $8.23/hour), based on 1981 Data Entry Management Association (DEMA) National Averages.

SFM Expected to Grow 45% a Year

MENLO PARK, Calif. — Equipment and services revenue for store-and-forward message (SFM) systems is expected to grow at an annual rate of 45% through 1990, according to one section of a new study entitled *Digital Communications* by Gnostic Concepts, Inc. Total revenue at that time will exceed $4.6 billion, the study concluded.

SFM systems provide for nonsimultaneous communications between parties. Persons are able to leave a message electronically on a centralized voice or video recording device, or data terminal, or by audio or video playback before delivery. The called party can retrieve and respond to the message when convenient.

The study anticipates the greatest growth will occur in the area of voice store-and-forward message systems. Beginning around 1985, medium-size to large businesses will begin to utilize this service integrated with new or preexisting private branch exchange systems.

The study provides a comparison of existing SFM systems and those in the later stages of development. Included are analyses of systems designed by Bell Laboratories, Inc. and others.

The study is available for $18,000 from the vendor at 2710 Sand Hill Road, Menlo Park, Calif. 94025.

Nickels & Dimes

Alphacom, Inc. has recently completed an agreement with **Churchill International** of San Francisco for $1.75 million of venture capital funding.

$$$

Multiplications, Inc., previously known as **Multisystems, Inc.**, has received $2.75 million in funding through the sale of 473,324 shares of Class A Preferred Stock to a consortium. Participants are Ampersand IV, Blyth Eastman Paine Webber, Memorial Drive Trust, The Charles River Partnership and Nazem & Lieber Venture Capital Partnership.

$$$

Convergent Technologies, Inc. has filed a registration statement with the Securities and Exchange Commission covering 4,400,000 shares of its common stock being offered by the company.

$$$

NBI, Inc., a manufacturer of word processing and office automation systems, has filed a registration statement with the Securities and Exchange Commission for the offering of 750,000 shares of common stock. All shares will be offered through a group of underwriters managed by Blyth Eastman Paine Webber, Inc. and Hambrecht & Quist.

$$$

Fortune Systems has raised an additional $10.5 million in a second round of financing, bringing the firm's outside venture capital investment to $19 million. Investers include the Equity Group of First National Bank of Chicago; Brentwood Associates; Asset Management Co.; Greyhound Computer Corp., a subsidiary of Greyhound Corp.; Thomson-CSF; Walter E. Heller & Co.; Vista Ventures of Stamford, Conn., an affiliate of the Standard Oil Co.; University Ventures of Pittsford, N.Y., a venture capital firm representing the University of Rochester; Robert R. Barker & Co., N.Y.; Churchill International, San Francisco; Sunflower Ltd., N.Y.; and Montgomery Securities, San Frncisco.

$$$

Callan Data Systems, Inc. has secured an additional $3 million in equity through the sale of convertible preferred stock to several California-based venture capital firms. Investors include Capital Management Services; Brentwood Associates; First Interstate Capital, the venture arm of First Interstate Bank; Convergent Technologies, Inc. President Allen Michels; and Dick Riordan and William Rollnick, major investors in Convergent.

$$$

Scan-Data Corp. has signed an agreement with **Control Data Corp.** to exchange 55,000 shares of Scan-Data redeemable Series C preferred stock for a long-term note of $4,496,525 and advances of $1,003,464. CDC currently owns convertible preferred stock which, if exercised, would amount to approximately 36% of the common stock of Scan-Data.

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Orders & Installations

Computer Sciences Corp. has entered into a joint venture agreement with Security Pacific National Bank to process payrolls for the bank's customers. The five-year contract is valued at more than $35 million.

Data Research Associates, Inc., an authorized Digital Equipment Corp. distributor, has received a $306,800 contract from the Arizona State Library for the Blind and Physically Handicapped for the installation of an automated readers advisory/circulation control system.

Cincom Systems, Inc. has installed its TIS information software at Hershey Foods in Hershey, Pa., and its LMS-II at Maul Technology of Indianapolis, Ind.

Data Communications Corp. has installed a cable network traffic system that automatically tracks all program scheduling and advertising and automates billing to customers for Cable News Network 2.

International Computing Systems, Inc. has been awarded a multiyear contract for computer software and hardware systems by the Belo Information Systems Division of the A.H. Belo Corp. Financial terms of the contract were not disclosed.

Singer & Co. of Atlanta has signed a three-year agreement for Informatics, Inc.'s Distribution IV information management services.

Insurance Information, Inc. has signed an agreement with the Farmers Alliance Mutual Insurance Co. of McPherson, Kan., for the delivery of a comprehensive agency/company communications system, plus multiple installations of a complete agency computer system.

Sesa-Honeywell Communications, Inc. will install a new data communications network linking Chase Manhattan Bank facilities located in Lake Success, N.Y.; Jacksonville, Fla.; and Los Angeles, Calif., as the initial phase of the Chase national data transmission facility project.

American Management Systems, Inc.'s local government financial system has been purchased by St. Louis County, Minn., to consolidate its financial operations and to do budgeting and planning for social programs serving their large Indian population.

Creative Computer Solutions, Inc. (CCS) and The Computer Works (TCW) have signed a joint contract with the Dallas Housing Authority for a fully integrated housing authority management information system. CCS developed the applications software and TCW supplied the Microdata Corp. hardware.

General Datacomm Industries, Inc. has signed a contract with the Hughes Aircraft Co. to furnish and install data communications equipment for Hacnet DTS, a corporatewide, high-speed, digital data termination service network that will provide point-to-point service for various divisions of Hughes.

Hughes Aircraft Co. has installed a 30-unit network of Sidereal Corp.'s Micronet multiport telecommunications terminals. The $400,000 system will link the firm's global system of manufacturing, administrative, marketing and service facilities.

IPL Systems, Inc.'s SMS Data Products Group has received an order for 12 IBM-compatible IPL Model 4446 computers from the Department of Defense's Logistic Agency. The order is valued at $3.4 million.

Credit Unions Gear Growth To Computerization: Study

NEW YORK — U.S. credit unions hold some $72 billion on account, representing deposits of 45 million members, according to a recent study by Frost & Sullivan, Inc. here. Such institutions now account for 5% of all consumer installment loans, but with the help of computerization, credit unions plan to expand their operations and offerings, the study indicated.

The 140-page report, entitled *Market for Data Processing Systems in Credit Unions*, probes the market outlook for data processing systems and services among credit unions. Frost & Sullivan predicted credit unions will spend approximately $1.8 billion on computer services, equipment, software, maintenance and business forms through 1985. This industry spent $287 million in 1981.

Furthermore, the report sees service bureaus' share of credit unions' DP dollars shrinking after 1983, at which time credit unions will switch over to their own in-house turnkey systems.

The research study costs $1,050 from Frost & Sullivan at 106 Fulton St., New York, N.Y. 10038.

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Contracts & Pacts

Planning Research Corp. has won a one-year $1.5 million contract to continue developing and testing a command and control information system for the headquarters of the U.S. Army Europe in Heidelberg, West Germany. The contract, which contains three one-year renewal options, has a total potential value of approximately $6 million.

Computer Sciences Corp. has been awarded three 2½-year contracts by the Naval Underwater Systems Center, Newport, R.I. Computer Sciences will continue providing engineering and computer software support services for development of the MK 1 submarine combat control system, the MK 117 submarine fire control system and related trainer-simulation systems.

Western Union, Inc.'s Field Service Division has been awarded a contract by Xerox Computer Services, a division of Xerox Corp., to provide nationwide field maintenance service for the company's 1330, 1340, 1340A and 1350 terminals over a five-year period.

Softech, Inc. has been awarded a $7.25 million three-year contract by the Aeronautical Systems Division, Air Force Systems Command at Wright Patterson Air Force Base. The contract, an extension of a $2.9 million contract awarded to the company in 1977, is for independent verification and validation of the precision location strike system.

E-Systems, Inc.'s ECI Division has received a $2.3 million contract from the U.S. Navy to design, integrate and test a computer program for use with the Tartar SM-2 surface-to-air missile.

At the recommendation of Systems Management American Corp. (SMA), the Computer Systems Division of the Harris Corp. will provide the U.S. Navy with superminicomputers for its Shipboard Nontactical Automatic Data Processing Program (Snap II), subject to successful completion of a rigorous "first-article test." The six-year contract is valued at over $40 million. SMA was awarded the Snap II contract by the Naval Sea Systems Command through the Small Business Administration.

Seagate Technology has reached an OEM agreement, valued in excess of $10 million, to supply Fortune Systems with 5½-in. Winchester disk drives for Fortune's 32:16 microcomputer business systems.

Molecular Computer has signed a $5 million, 18-month contract for its Supermicro 8 and Supermicro 32 microcomputers with Kaltronics, Inc., a Chicago-based computer distributor.

Applied Digital Data Systems, Inc. has received an order for 1500 Viewpoint and Viewpoint/90 display terminals from Basic Systems Corp. of Inglewood, Calif. The contract is valued at more than $750,000.

Datamac Computer Systems has received an order for several hundred 8-bit desktop computers from Midas Computer Systems, a British-based firm specializing in systems integration. The contract, valued at over $1 million, calls for delivery over a 12-month period.

Tri-Data Corp. has signed a major service contract with Digital Equipment Corp., providing nationwide DEC service on all Tri-Data OZ products that integrate with most of DEC's LA34 and LA120 teleprinters.

Kaltronics Distributing, Inc. has signed a $1 million contract with Olivetti OPE to distribute Olivetti's DY211 daisywheel printer.

Archive Corp. has signed a multimillion dollar agreement with Philips Data Systems, Apeldoorn, The Netherlands, to provide its full range of Sidewinder ¼-in. streaming-cartridge tape drives for incorporation into Philips P4000 series of standard business computers, which will be marketed worldwide.

Pinetree Systems, Inc., a manufacturer of two-way, hand-held intelligent data terminals, will supply Decision Data Computer Corp.'s Customer Service Division with portable data entry terminals for their field engineers.

Data Star, Inc. has signed OEM agreements with Emulex Corp., enabling the company to offer a full range of disk, tape and communications controllers for the DEC LSI-11, PDP-11 and VAX-11 computer marketplace.

Tymnet, Inc. has been awarded a $6.6 million contract by the General Services Administration for the installation of the Advanced Record System dedicated communications network.

Small Business Systems, Inc. a Data General Corp. systems supplier, has been awarded a $30 million contract for administrative computer systems and related services by

(Continued on Page 122)

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Consulting Firm Addresses Users' Reactions to Products

CAMBRIDGE, Mass. — Kalba Bowen Associates, Inc., a consulting firm, has launched a multiclient program on the small business market for telephone systems, microcomputers, videotext and other electronic products and services, a company spokesman said. The Kalba Bowen Focus Group Program will address how small business users react to product and service functions, design, price, servicing and brand names.

"We are offering a research service that will give corporate strategists, planners and managers an ongoing channel of buyer feedback about this increasingly sophisticated market," Kas Kalba, president of the company, said.

The focus groups will be held in several locations and will include participants from retailing, wholesaling, professional services, trade and service industries. Subscriptions to the group will cost $7,500 before June 15 and $8,500 after that date.

More information can be obtained by contacting Kalba Bowen Associates, 12 Arrow St., Cambridge, Mass. 02138.

Contracts & Pacts

(Continued from Page 120)

the Federal Aviation Administration.

Planning Research Corp. has been awarded an $11.8 million contract by the U.S. Air Force's Rome Air Development Center and the Defense Intelligence Agency to continue development and life-cycle support of the Advanced Imagery Requirements and Exploitation System.

Century Computing, Inc. has been awarded a two-year, $1.2 million contract by the National Aeronautics and Space Administration for the development of portable software designed to provide a standard user interface for scientists engaged in interactive, computer-assisted analysis.

Microcomputer Systems Corp.'s Xebec Co. has signed a $1.5 million contract with R2E of France, a subsidiary of CII-Honeywell Bull, to develop and supply a customized version of the Xebec S1410 5¼-in. Winchester disk controller.

Raytheon Co. has been awarded a $34.7 million contract by the Federal Aviation Administration to upgrade the Direct Access Radar Channel (Darc) air traffic control system. The Darc system, in use as backup for the main computer system at 20 en route air traffic control centers, will be expanded to provide all of the major radar automation features currently not available during main computer outages

United Technologies' Norden Systems has signed an agreement with Digital Equipment Corp. to design, manufacture and market militarized versions of DEC's VAX family of computers.

Edutronics/McGraw-Hill has acquired exclusive rights to sell and lease Intel Systems Corp.'s multimedia training courses for users of System 2000 software.

Computer Sciences Corp. has been awarded $460,000 by the Department of Defense (DOD) to support the development of standards for Ada program development environments. Ada is the language intended for standard use by the DOD in all embedded computer system applications.

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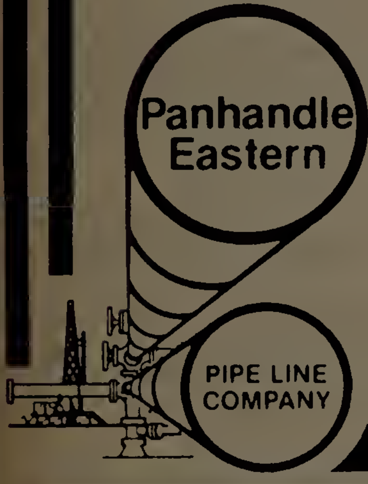

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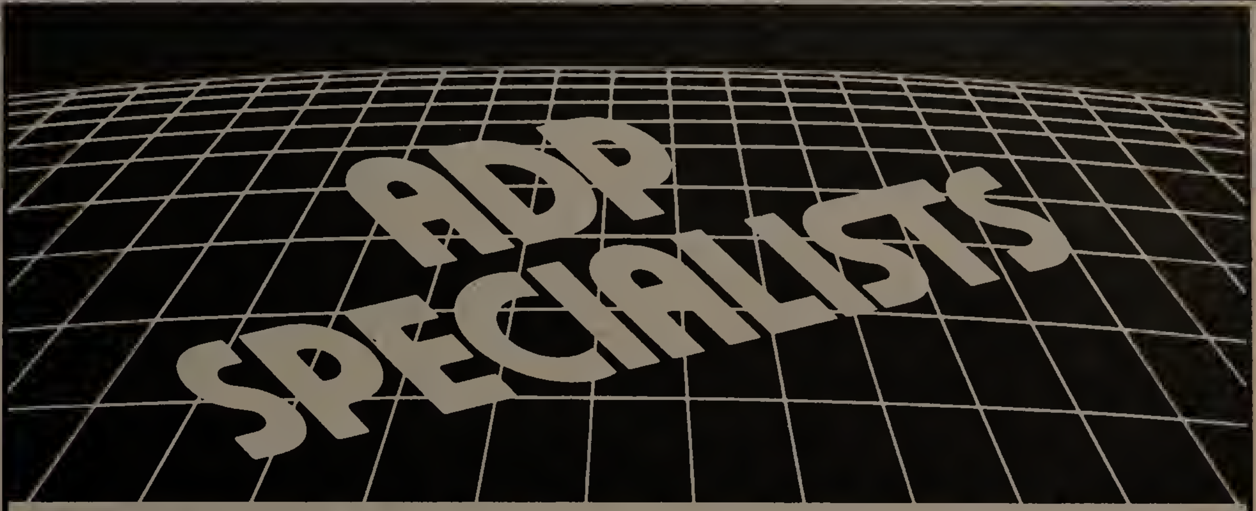

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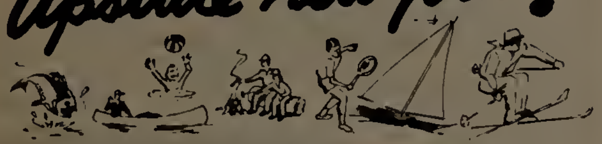

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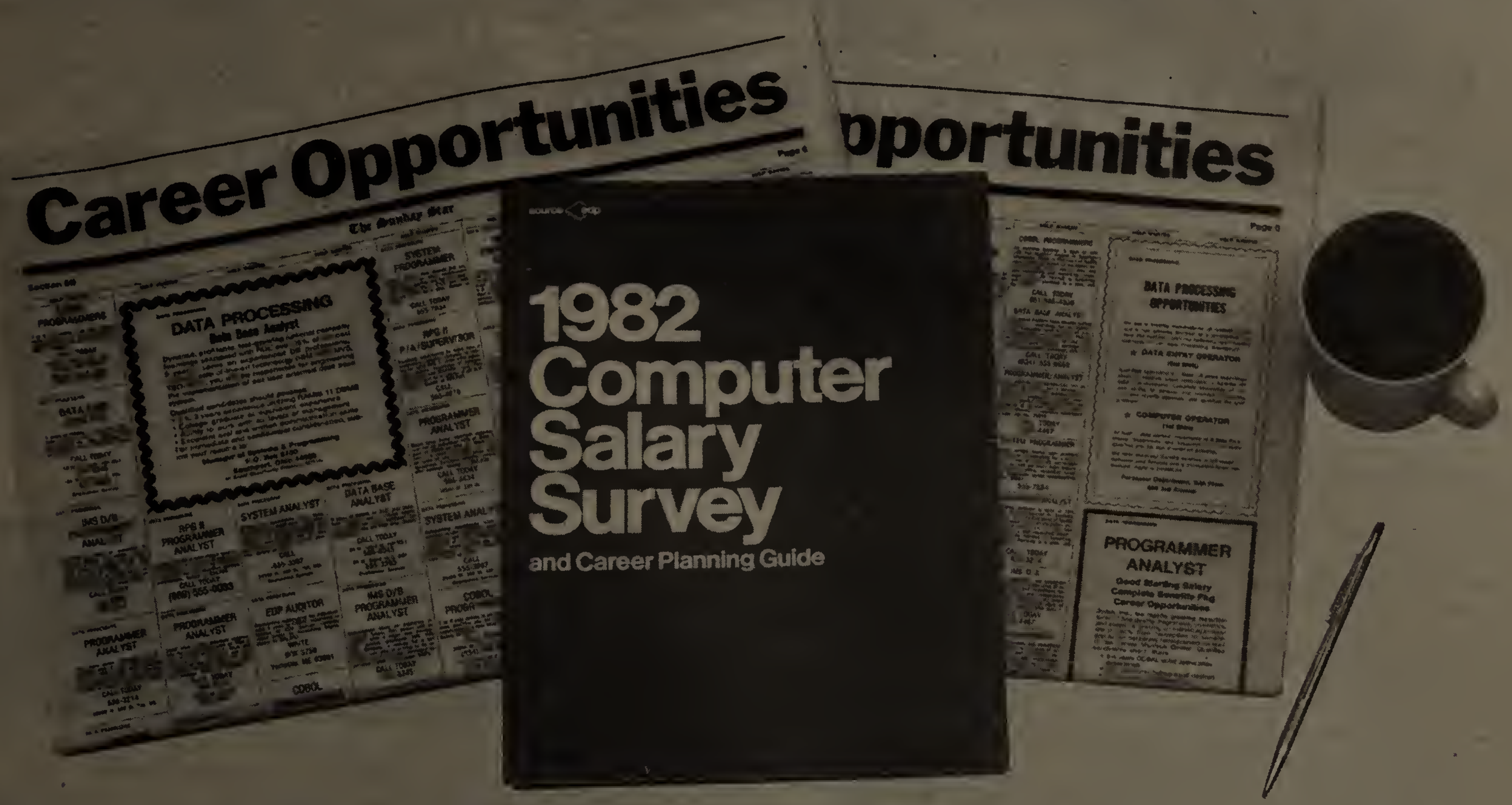

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- Some emerging technologies—microcomputer systems, for example—are having an unusual impact on compensation.

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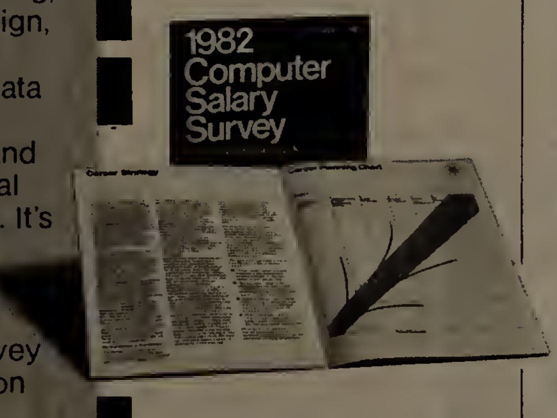

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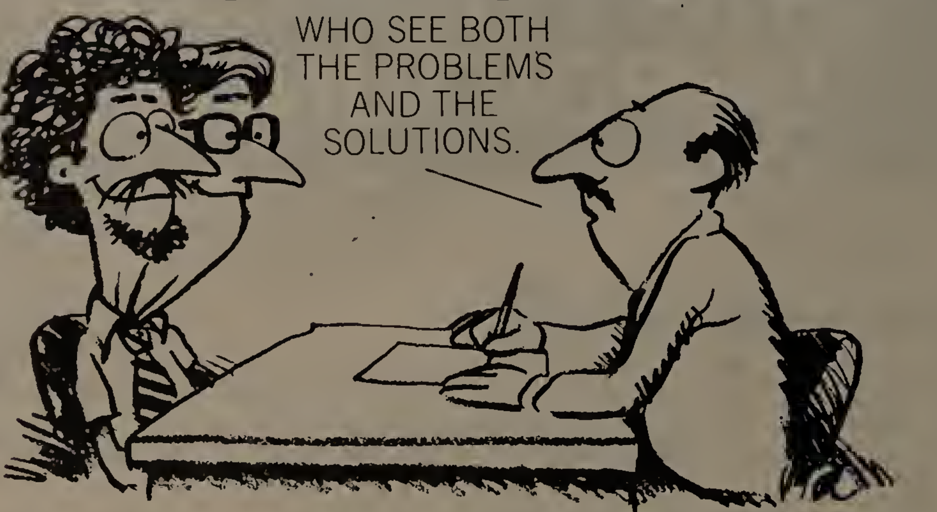

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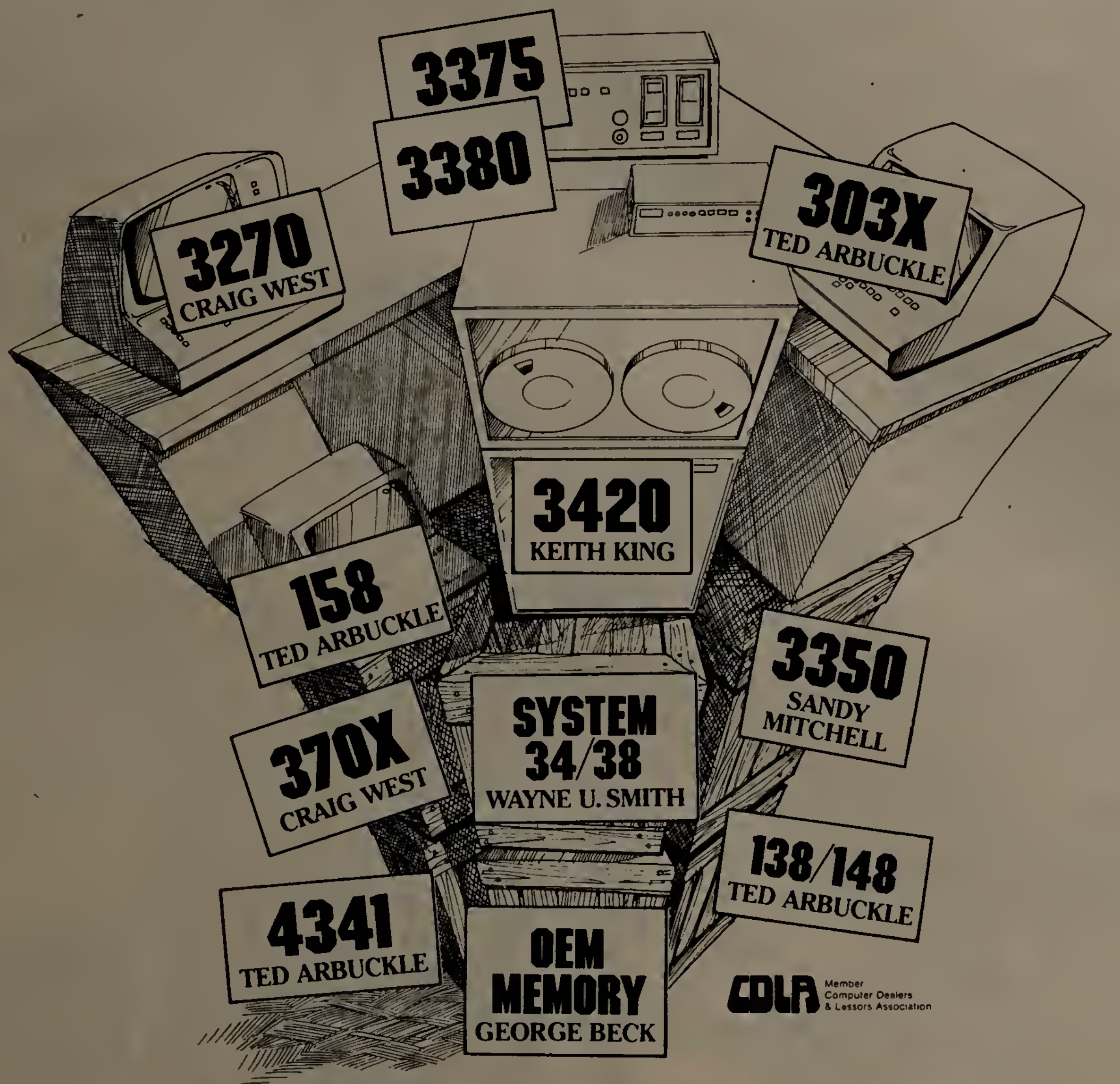

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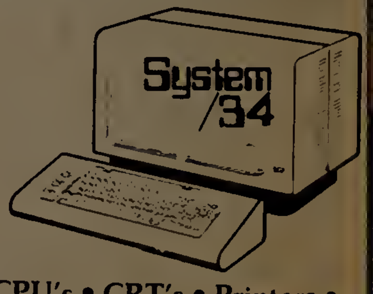

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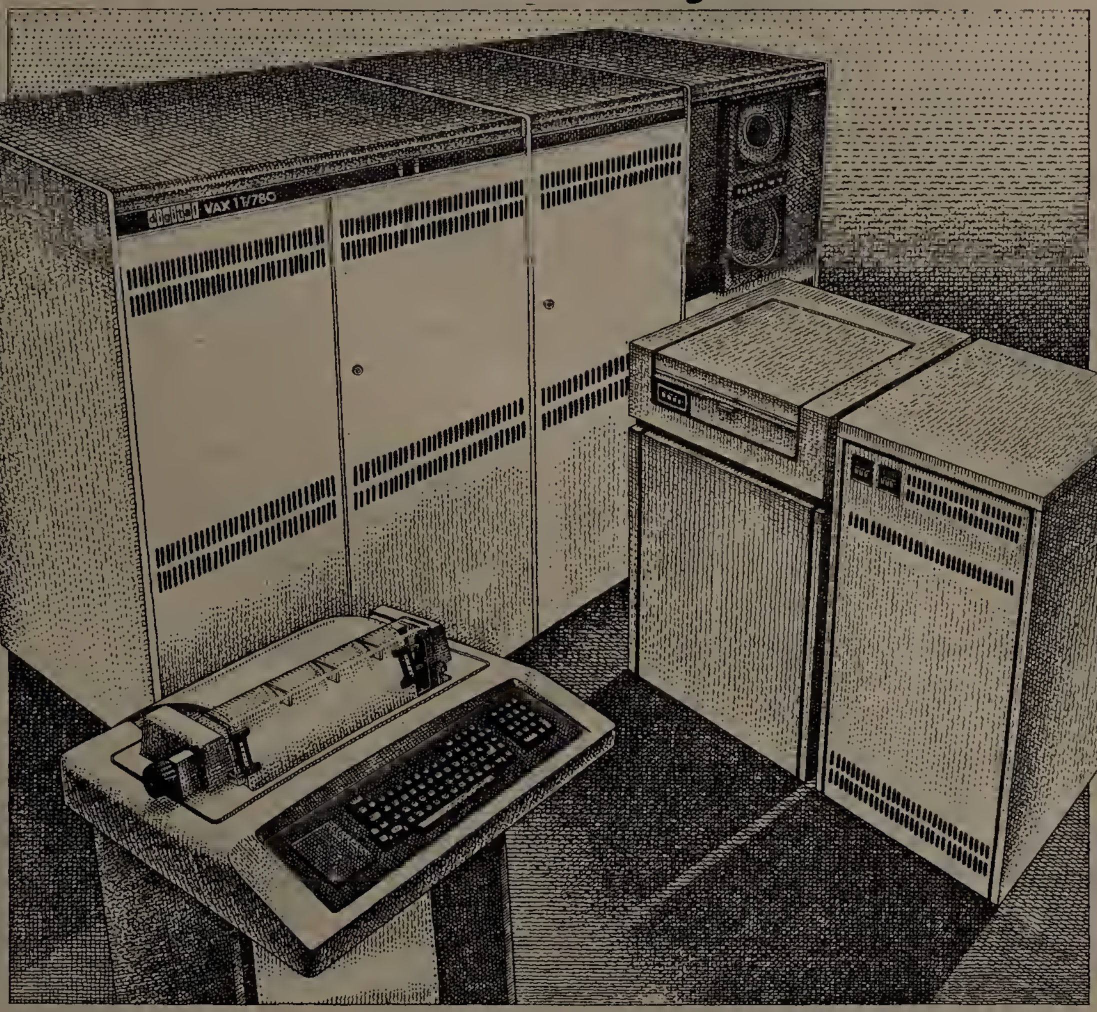

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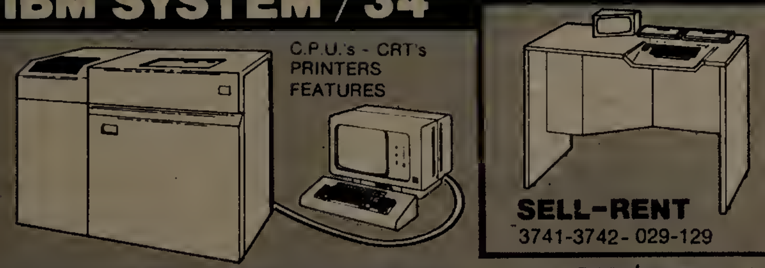

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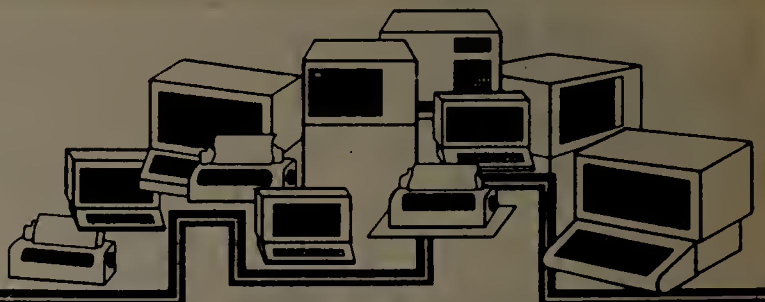

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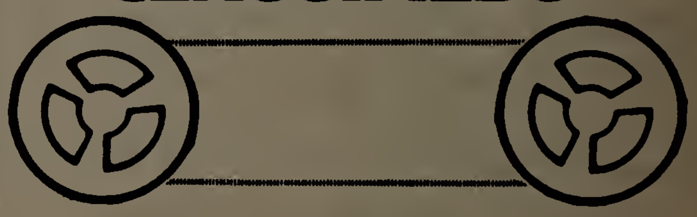

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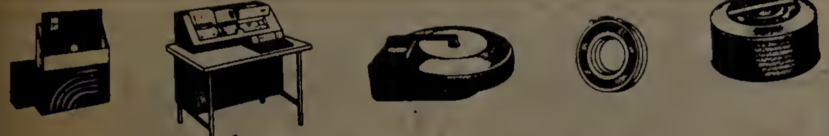

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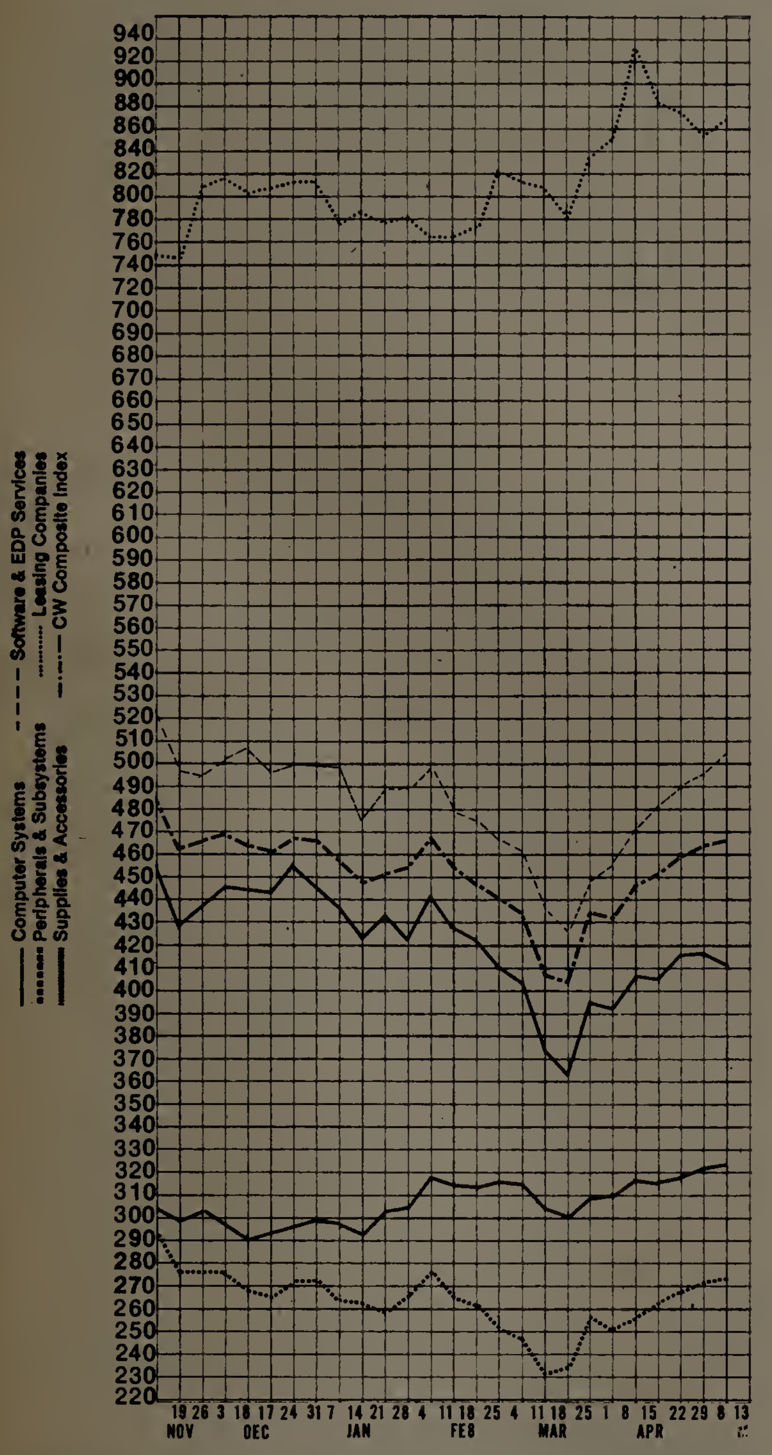

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EXCH		PRICE			
		1981-82 RANGE (1)	CLOSE MAY 5 1982	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
A	AMDAHL CORP	19- 46	22 1/2	+1 3/8	+6.5
N	BURROUGHS CORP	28- 72	36 1/2	0	0.0
O	COMPUTER AUTOMATION	8- 28	8 I/2	- 1/4	-2.8
N	CONTROL DATA CORP	19- 42	29 7/8	- 5/8	-2.0
N	CRAY RESEARCH INC	24- 49	26 1/2	+ 7/8	+3.4
N	DATA GENERAL CORP	27- 87	28 7/8	-5	-14.7
N	DATAPOINT CORP	13- 68	13 7/8	-7 7/8	-36.2
N	DIGITAL EQUIPMENT	72-113	79 5/8	-1 1/4	-1.5
A	EECO INC	6- 19	8 3/4	0	0.0
N	ELECTRONIC ASSOC.	5- 13	8 3/8	+ 1/2	+6.3
N	FOXBORO	33- 62	37 3/4	+ 3/4	+2.0
O	FULCRUM COMP GRP	1- 3	1/4	0	0.0
O	GENERAL AUTOMATION	3- 16	4 7/8	- 1/4	-4.8
N	HARRIS CORP	28- 60	30 1/8	-1 3/8	-4.3
N	HEWLETT-PACKARD CO	33- 54	43 1/2	- 7/8	-1.9
N	HONEYWELL INC	63-115	72 3/8	+1 7/8	+2.6
N	IBM	49- 73	65 1/8	+ 1/4	+0.3
O	IPL SYSTEMS INC	6- 13	6 3/4	0	0.0
O	MAGNUSON COMP SYSTS	3- 32	3 3/4	- 1/8	-3.2
N	MANAGEMENT ASSIST	9- 26	16 3/4	+ 3/8	+2.2
O	MINI-COMPUTER SYST	0- 4	7/8	+ 1/8	+16.6
N	MODULAR COMPUTER SYS	7- 32	7 3/4	+ 3/8	+5.0
N	MOHAWK DATA SCI	10- 32	11 3/8	-I 1/2	-11.6
N	NCR	39- 76	48 3/4	0	0.0
N	PRIME COMPUTER INC	17- 49	21 3/4	- 7/8	-3.8
N	PERKIN-ELMER	19- 36	22 3/4	- 1/8	-0.5
N	SPERRY CORP	27- 65	27 1/4	-1 1/4	-4.3
O	TANDEM COMPUTERS INC	13- 35	28 3/4	+1 1/2	+5.5
N	TEXAS INSTRUMENTS	71-151	89 1/2	-1	-1.1
A	WANG LABS.	22- 46	25 5/8	-1 1/2	-5.5
	LEASING COMPANIES				
O	BOOTHE FINANCIAL CP	18- 29	23 3/4	0	0.0
N	COMDISCO INC	16- 27	17 3/4	- 3/8	-2.0
B	COMMERCE GROUP CORP	1- 2	3/8	0	0.0
O	COMPUTER INVSTRS GRP	1- 4	1/2	+ 1/8	+33.3
O	CONTINENTAL INFO SYS	4- 9	6 3/4	0	0.0
N	DPF INC	5- 13	9 3/8	0	0.0
O	ITEL	1- 15	5/8	- 1/8	-16.6
O	LEASPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 30	26 1/4	0	0.0
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 6	1 1/4	+ 1/4	+25.0
O	ADVANCED SYSTEMS INC	10- 15	13 3/4	0	0.0
O	ANACOMP INC	10- 19	12 1/4	- 5/8	-4.8
O	ANALYSTS INTL CORP	3- 14	7 1/2	+ 1/4	+3.4
A	APPLIED DATA RES.	13- 25	22 3/8	+ 3/8	+1.7
O	ASK COMPUTER SYSTEMS	11- 17	I7	+1 1/2	+9.6
B	ASTRADYNE COMP IND	2- 5	3 1/4	0	0.0
N	AUTOMATIC DATA PROC	22- 32	25 5/8	+ 1/4	+0.9
O	CGA COMPUTER ASSOC	4- 25	6 1/2	+ 1/2	+8.3
O	COMPUTER HORIZONS	1- 5	2 1/2	+ 1/4	+11.1
O	COMPUTER NETWORK	4- 9	7 5/8	+1 1/4	+16.6
N	COMPUTER SCIENCES	11- 30	12	- 1/4	-2.0
O	COMPUTER TASK GROUP	10- 23	11 3/4	+ 1/2	+4.4
O	COMPUTER USAGE	2- 10	2 3/4	0	0.0
O	COMSERV CORP	9- 16	14 1/2	+ 3/4	+5.4
O	COMSHARE	6- 21	5 7/8	- 3/4	-11.3
O	CULLINANE DATABASE	15- 37	33 3/8	+2	+8.3
O	DATA.DIMENSIONS INC	0- 4	1/4	0	0.0
O	DATATAB	1- 4	1	0	0.0
O	DSI CORP	4- 9	5 7/6	+ 1/8	+2.1
O	DYATRON CORP	2- 11	2 7/8	+ 1/8	+4.5
N	ELECTRONIC DATA SYST	15- 30	27 7/8	+1 1/4	+4.6
O	INFORMATICS INC	10- 23	19 3/4	+ 1/4	+1.2
O	INSYTE CORP	1- 3	2 3/8	0	0.0
O	IPS COMPUTER MARKET.	1- 4	1 1/8	0	0.0
O	KEANE ASSOCIATES	4- 8	4 3/4	- 1/4	-5.0
A	LOGICON	12- 38	13 5/8	+ 1/4	+1.8
O	MNGT SCI AMER INC	17- 26	23 1/2	+ 3/4	+3.2
O	MATHEMATICA INC	12- 26	17	- 1/2	-2.8
O	MATHEMATICAL APP GRP	14- 28	17 1/2	- 1/2	-2.7
O	NATIONAL DATA CORP	14- 28	17 3/4	- 3/8	-2.0
O	PANSOPHIC SYSTEMS	8- 15	I1	- 1/4	-2.2
N	PLANNING RESEARCH	5- 13	7 5/8	+ I/4	+3.3
O	PROGRAMMING & SYS	1- 2	1 3/8	0	0.0
O	REYNOLDS & REYNOLD	16- 26	21 1/4	+ 1/4	+1.1
O	SEI CORP	17- 28	26	-1 1/2	-5.4
O	SHARED MEDICAL SYST	26- 37	30 1/4	- 3/8	-1.2
O	STSC INC	6- 28	7	- 1/4	-3.4
O	SCIENTIFIC COMPUTERS	6- I6	8 3/4	+ 1/4	+2.9
O	SOFTWARE AG	7- 23	9 1/8	- 1/8	-1.3
N	TYMSHARE INC	16- 58	21 1/4	+1 1/8	+5.5
A	URS CORP	11- 18	11 3/4	0	0.0
N	WYLY CORP	7- 20	8	- 1/4	-3.0
	PERIPHERALS & SUBSYSTEMS				
N	AM INTERNATIONAL	1- 25	1 1/8	0	0.0
A	ANDERSON JACOBSON	9- 26	10 3/4	+ 1/4	+2.3
O	AUTO-TROL TECHNOLOGY	8- 62	11 1/4	+1	+9.7
O	BANCTEC INC	12- 35	11 3/4	-2	-14.5
O	BEEHIVE INT'L	6- 18	7 3/8	+ 1/2	+7.2
A	BOLT,BERANEK & NEW	9- 25	18 3/8	+ 3/8	+2.0
O	CAMBEX CORP	2- 9	2 3/4	+ 1/8	+4.7
N	CENTRONICS DATA COMP	7- 40	11 3/4	+ 1/2	+4.4
A	CETEC CORP	4- 9	4	- 1/8	-3.0
O	COMPUTER DEVICES INC	4- 10	8 3/8	+ 1/4	+3.0
O	COGNITRONICS	2- 11	3 3/4	- 3/4	-16.6
O	COMPUTER COMMUN.	1- 2	7/8	0	0.0
A	COMPUTER CONSOLES	16- 28	24	-1 1/8	-4.4
O	COMPUTER TRANSCEIVER	3- 9	5 7/8	0	0.0
N	COMPUTERVISION CORP	20- 49	33 7/8	+ 3/4	+2.2
N	CONRAC CORP	17- 28	24 3/4	- 1/2	-1.9
A	DATA ACCESS SYSTEMS	2- 23	1 7/8	0	0.0
A	DATAPRODUCTS CORP	17- 44	23 1/4	0	0.0
O	DATUM INC	2- 5	1 1/2	0	0.0
O	DAVID JAMISON CARLYL	3- 7	4 1/4	- 1/2	-10.5
O	DECISION DATA COMPUT	3- 6	4	+ 1/2	+14.2
O	DELTA DATA SYSTEMS	2- 4	2 3/8	+ 5/8	+35.7
O	DATARAM CORP	4- 15	7 3/4	+ 1/8	+1.6
N	ELECTRONIC M & M	3- 9	4	0	0.0
O	EVANS & SUTHERLAND	18- 40	23 3/4	+2	+9.1
N	GEN'L DATA COMM IND	7- 19	9 1/8	+ 1/8	+1.3
O	GENERAL TERMINAL CP	0- 4	3/8	0	0.0
O	GREAT SOUTHWEST IND	1- 12	5	- 1/4	-4.7
N	HAZELTINE CORP	19- 35	28 1/2	-1 3/4	-5.7
O	INFORMATION INTL INC	8- 17	11 1/2	+ 1/4	+2.2
O	INTEL CORP	21- 51	32 1/2	+ 1/2	+1.5
O	IPL SYSTEMS INC	5- 15	6 3/4	0	0.0
A	LUNDY ELECTRONICS	7- 18	9 3/4	- 3/8	-3.7
A	MSI DATA CORP	11- 27	19 1/2	- 1/2	-2.5
O	NETWORK SYSTEMS CORP	14- 25	20 I/8	+ 1/2	+2.5
O	OMEX	5- 8	3	0	0.0
N	PARADYNE CORP	25- 52	39 5/8	- 3/8	-0.9
A	PENRIL CORP	7- 17	9	0	0.0
O	RAMTEK CORP	9- 23	18 1/2	+1 1/4	+7.2
N	RECOGNITION EQUIP	4- 21	4 3/4	- 1/8	-2.5
O	SCAN DATA	1- 5	1 1/4	0	0.0
N	STORAGE TECHNOLOGY	18- 40	24 3/4	-1 1/8	-4.3
O	SYKES DATATRONICS	8- 34	14 1/4	-1 1/2	-9.5
A	T BAR INC	12- 19	15	+ 1/8	+0.8
A	TEC INC	4- 11	7 1/2	- 7/8	-10.4
N	TEKTRONIX INC	43- 70	55 1/4	+ 1/8	+0.2
N	TELEX	5- 10	9 3/8	+ 3/8	+4.1
O	TESDATA SYSTEMS CP	4- 17	4 5/8	+ 1/4	+5.7
A	TIMEPLEX INC	7- 19	9 7/8	+ 1/2	+5.3
O	WILTEK INC	1- 3	1 1/2	0	0.0
	SUPPLIES & ACCESSORIES				
N	AMERICAN BUS PRODS	11- 17	12 1/2	+ 1/2	+4.1
O	BALTIMORE BUS FORMS	1- 2	1 1/4	0	0.0
N	BARRY WRIGHT	15- 24	15 5/8	- 7/8	-5.3
O	CYBERMATICS INC	1- 2	1	0	0.0
A	DUPLEX PRODUCTS INC	12- 17	I4 1/2	+ 1/8	+0.8
N	ENNIS BUS. FORMS	15- 23	21 5/8	+2 1/8	+10.8
N	3M COMPANY	48- 65	55 1/2	- 1/8	-0.2
O	MOORE CORP LTD	27- 38	30 7/8	- 3/8	-1.1
N	NASHUA CORP	16- 33	17 1/2	- 1/8	-0.7
O	STANDARD REGISTER	30- 41	38 3/4	+ 1/2	+1.3
A	TAB PRODUCTS CO	14- 30	14 3/4	- 3/4	-4.8
N	WALLACE BUS FORMS	22- 36	31 7/8	+ 5/8	+2.0

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH; B=BOSTON
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
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